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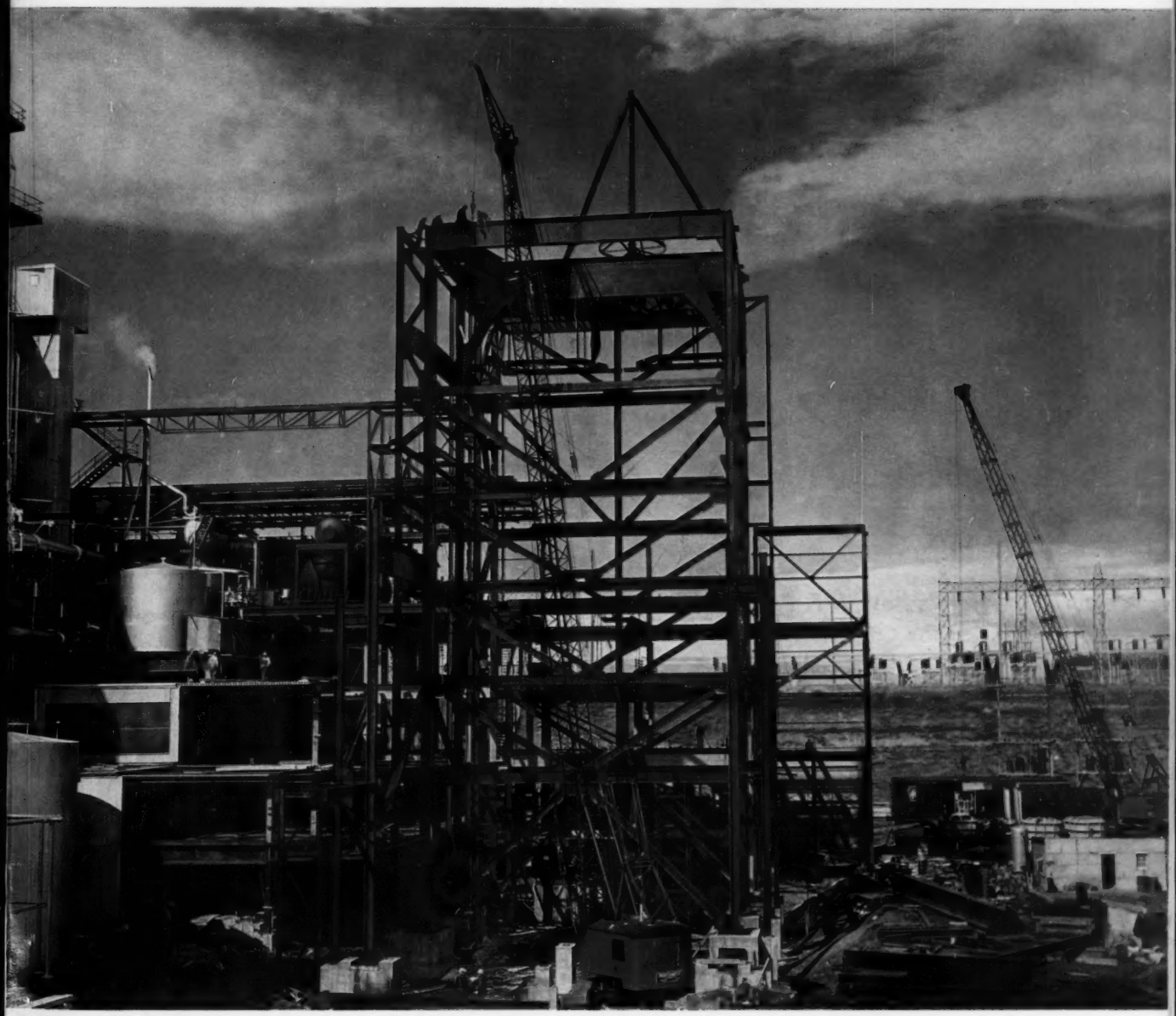
Construction Methods AND EQUIPMENT

A McGRAW-HILL PUBLICATION

FEBRUARY, 1959



Long-boom crane erects an addition to a Denver power plant while its companion rig unloads material from rail cars in the background. The 110,000-kw capacity unit is due for summer completion.

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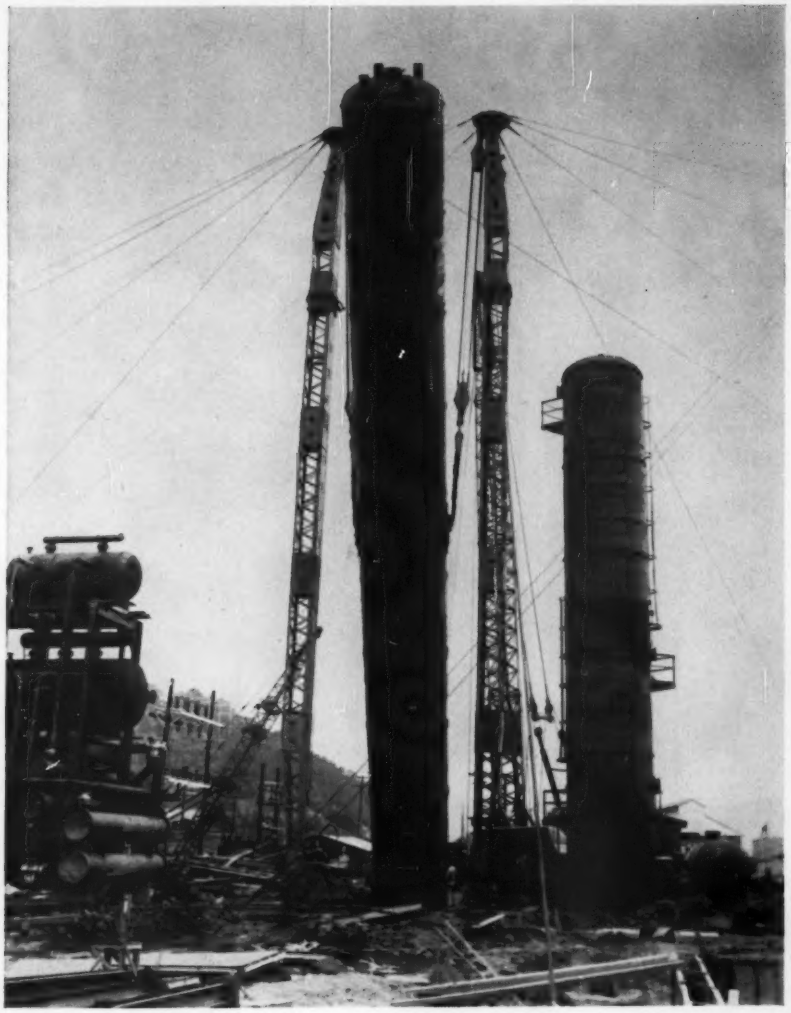
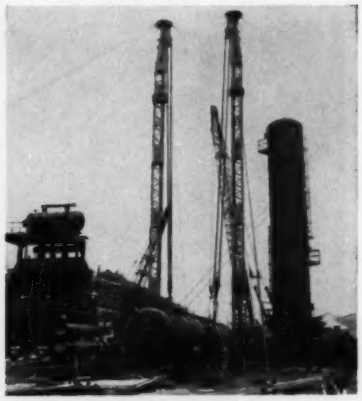


UP...ALL IN ONE PIECE!



Here's how J. F. Pritchard & Company, Kansas City, Mo., erected this 340,000 lb., 102'-6" extractor in one piece

The world's largest absorber will soon be in operation at the Hydro-carbon Extraction Facilities for United Fuel Gas Company of Charleston, West Va. Heart of the facility is the absorber vessel weighing 170 tons and measuring 102'-6" x 14' in diameter. To set this giant vessel upright, Pritchard used two 125-ton masts and Skagit hoists equipped with Yellow Strand Wire Rope. Pritchard selected two Yellow Strand Braided Safety Slings 49' long made of 8 parts of 1⅛" wire rope to cradle the absorber as it was lifted and placed in position.

When valuable equipment—even *lives*—depend on flawless performance of wire rope, be sure it's Yellow Strand!

Broderick & Bascom Rope Co., 4203 Union Boulevard, St. Louis 15, Mo.

Yellow Strand® WIRE ROPE SLINGS CLIPS

B.F.Goodrich

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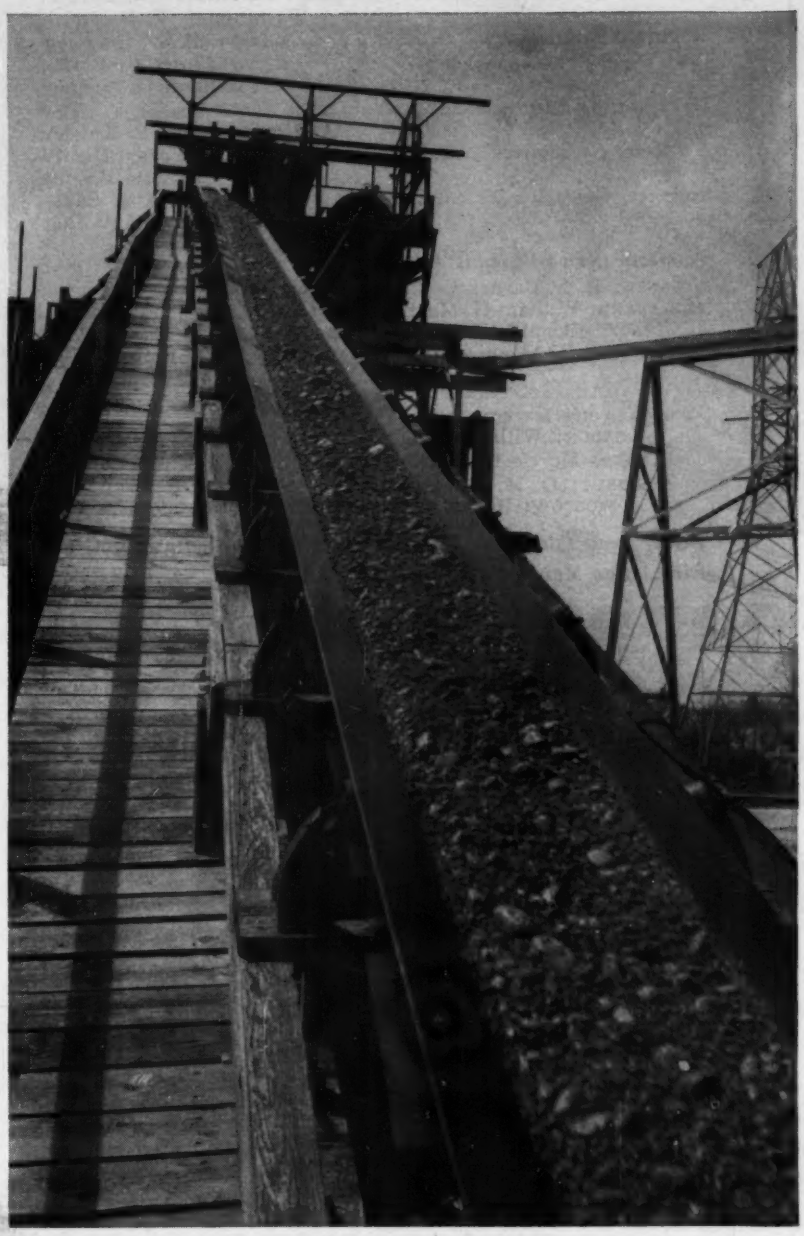

B.F.Goodrich cord belt stands impact, carries heavy loads further

TONS of sand and gravel dumped on that conveyor belt are carried high into the air to a separator. Heavy loads like this wore out an ordinary belt in 5 years, but this B.F.Goodrich cord belt has already lasted almost 10 years without one repair and practically no maintenance—and it still looks good for several years more.

The ability to stand heavy impact and carry heavy loads long distances is built into the B.F.Goodrich cord belts. Cords running lengthwise, without cross threads binding them together, are surrounded by rubber. They are free to "give" on impact, with rubber taking the shock. Because of this flexibility, the cord belts conform to idlers, pulleys. Spillage is reduced, troughing is natural and belts keep centered on idlers, sustain less damage, require less maintenance.

Good as the record is on the belt in the picture, chances are that it will soon be bettered because of the improvements that are constantly being made in B.F.Goodrich Nycord belts. In recent years, for example, the use of improved rubber compounds and stronger fabrics has resulted in cord belts that last even longer, carry heavier loads, stand even more pounding.

Any conveying operation that submits a belt to punishing impact at loading chute, heavy loads with long centers and high lifts can use B.F.Goodrich cord belts. Your B.F.Goodrich distributor can give you full information. *B.F.Goodrich Industrial Products Co., Dept. M-525, Akron 18, Ohio.*

B.F.Goodrich *conveyor belts*

New Richmond Structural Concrete Inserts

With sufficient strength and safety for permanent fastening to concrete.

Available in ⅛" to 1½" diam. in strengths to 65,000 lbs. in 3,000 psi concrete

The *new* Richmond Structural Concrete Inserts are prefabricated from a special design which distributes the bolt stresses into the concrete for greater strength than any previously known device. Certified tests of these units in concrete at 3,000 p.s.i., verify this claim and permit design engineers to approach the problem of fastening appurtenances to structural concrete with greater security than has been possible in the past.

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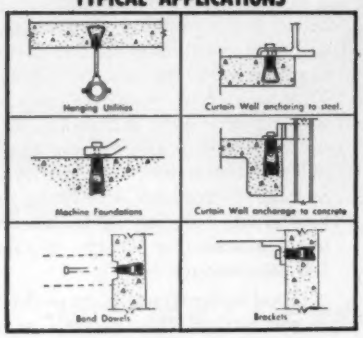

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Construction Methods AND EQUIPMENT

FEBRUARY, 1959

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CONSTRUCTION METHODS AND EQUIPMENT was founded in 1919, under the name of SUCCESSFUL METHODS, by the Manufacturers Publicity Bureau, Inc., of Chicago, representing a group of non-competing manufacturers of construction equipment. Charles B. Thomas, editor of the first few issues, was succeeded by William Jabine.

In 1926 the McGraw-Hill Publishing Company, Inc., of New York, purchased the publication, changing its name to SUCCESSFUL CONSTRUCTION METHODS in November of that year, to CONSTRUCTION METHODS in May 1927, to CONSTRUCTION METHODS AND EQUIPMENT in December 1936, and to CONSTRUCTION METHODS in October 1939. In July 1949, the name CONSTRUCTION METHODS AND EQUIPMENT was resumed. All rights to the foregoing titles are reserved by the publishers.

Robert K. Tomlin was appointed editor of CONSTRUCTION METHODS in January 1928, was succeeded by Waldo G. Bowman in January 1946, by Harold W. Richardson in February 1949, and by Henry T. Perez in June 1954.

MEMBER

VOLUME 41 — NUMBER 2

CONSTRUCTION METHODS AND EQUIPMENT, January 1959. Established in 1919. Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) Founder.

Editorial, Executive, Circulation, and Advertising offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Publications Division:** Nelson Bond, President; Shelton Fisher, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator.

Subscriptions are solicited only from persons engaged in construction or in supplying the construction industry. Position and company connection must be indicated on subscription orders.

United States subscription rate for individuals in the field of publication $3 per year, single copies $1.00; foreign $15 per year, payable in advance. Second class postage paid at New York, N. Y. Printed in U.S.A. Title registered in U.S. Patent Office. ©Copyright 1959 by McGraw-Hill Publishing Co., Inc.—All rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, CONSTRUCTION METHODS AND EQUIPMENT, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

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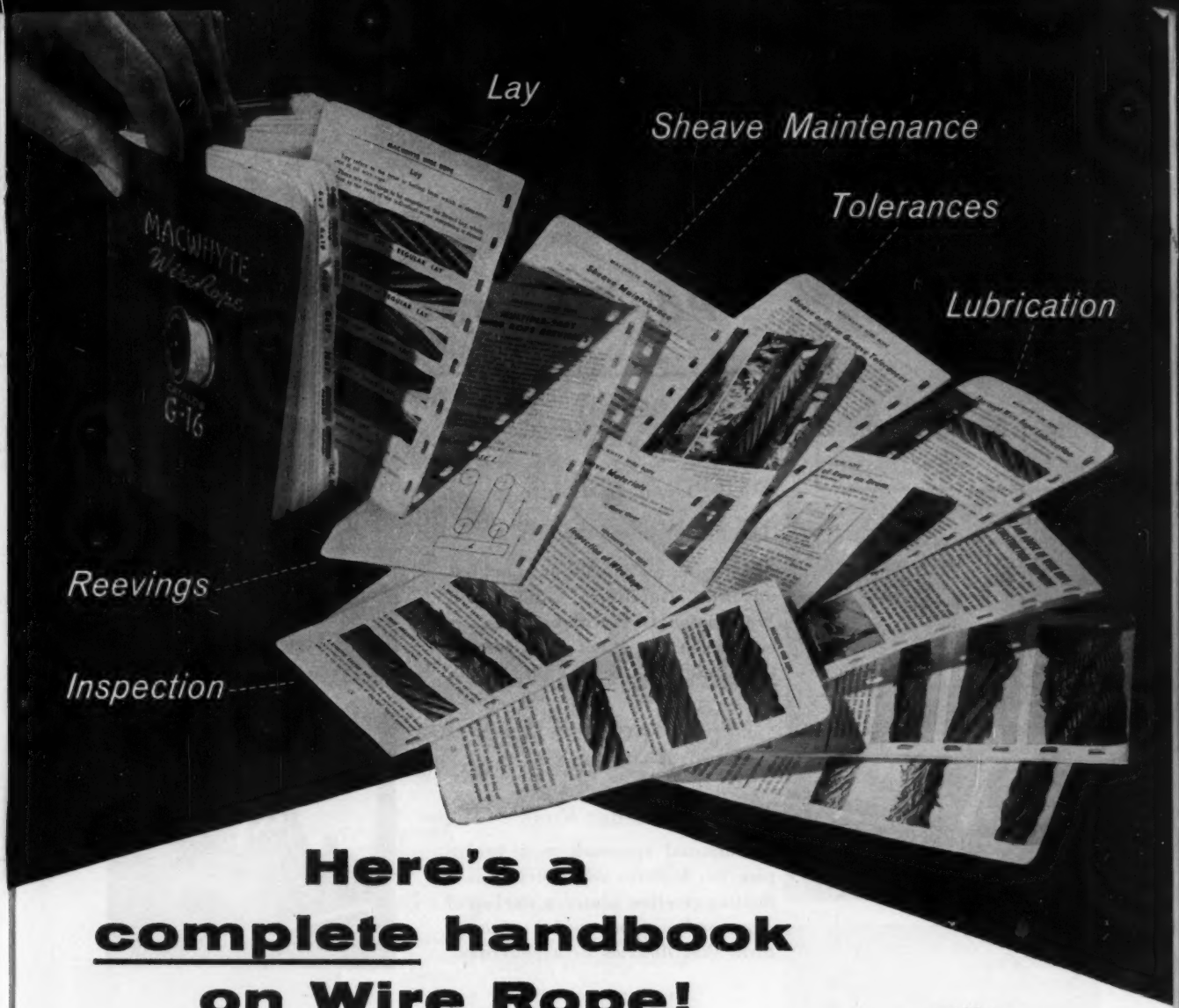

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Here — in a compact book — is the information you can use to reduce your yearly rope costs. It's free to wire rope users . . . just ask for G16: Macwhyte's "Blue Book of Wire Rope."

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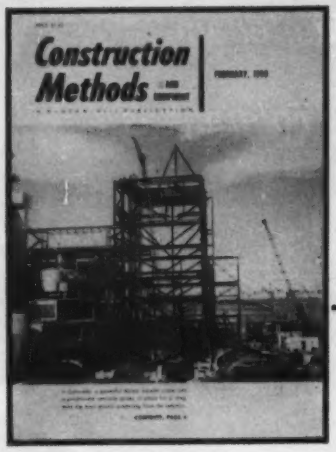

ON THE COVER

Ebasco Services, Inc., engineers and contractors, are rushing completion of Public Service Co. of Colorado's latest addition to its Cherokee steam-electric station whose ultimate capacity is planned for 1,000,000 kw. The two Northwest cranes with 145-ft booms and 25-ft jibs are working on the plant's 110,000-kw second unit. B. A. Snow is construction superintendent.

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NEXT MONTH

Winter work is right on schedule on one phase of the giant modernization program of New York harbor. Stock Construction Co., with a $6.8-million contract for the substructure of Pier 40, has completed most of the pile driving work, using the old piers as work platforms. Now they are laying the precast concrete pier deck slabs.

FEBRUARY, 1959

Pay Dirt in This Issue

Well-Placed Dynamite Drops Three Buildings . . 98

An imaginative demolition man blew up three eight-story buildings in Washington, D. C. with one blast for each. And he didn't even scratch the buildings across the street.

A New Way To Build Bridge Piers . .132

An unusual approach to a bridge pier job features such devices as a floating erection gantry, a steel spud cage, and an underwater concrete form that doubles as a cofferdam.

Roadbuilders: Match This Job 113

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HERE'S THE BIG Gradall

Get versatility plus high production with this new giant Gradall

This new, versatile 200-horsepower addition to the Gradall line offers you all these money-making advantages:

1. Large buckets (up to 2 yards plus) give you big yardage.
2. Digs 18 feet deep — up to 25 feet with extensions — loading height of 18½ feet.
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10. Boom tilts 120°—360° boom tilt optional.
11. Interchangeable from truck to crawler — in the field.

Gradall is also available on carrier-mount for fast "between job" moves and, in addition, provides a solid working base — regardless of the terrain.

Arrange today with your Gradall Distributor to see this latest addition to the Gradall family. He'll show you how this more powerful, rugged machine can speed up all types of earth-moving operations . . . boost your overall job profits!

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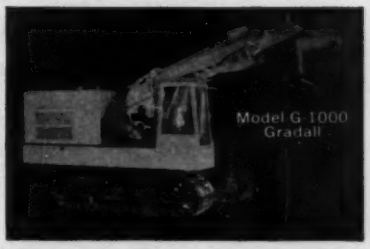
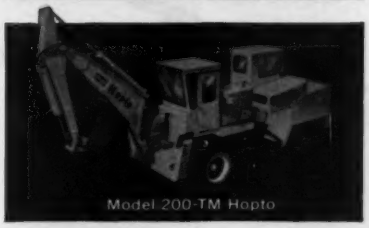
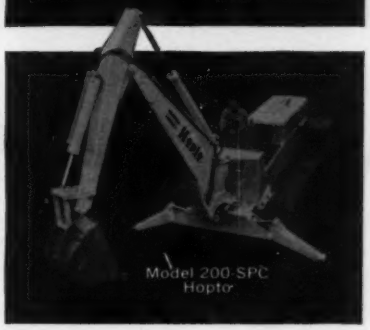
NOW WARNER & SWASEY BRINGS YOU THIS COMPLETE LINE OF HYDRAULIC EXCAVATORS..

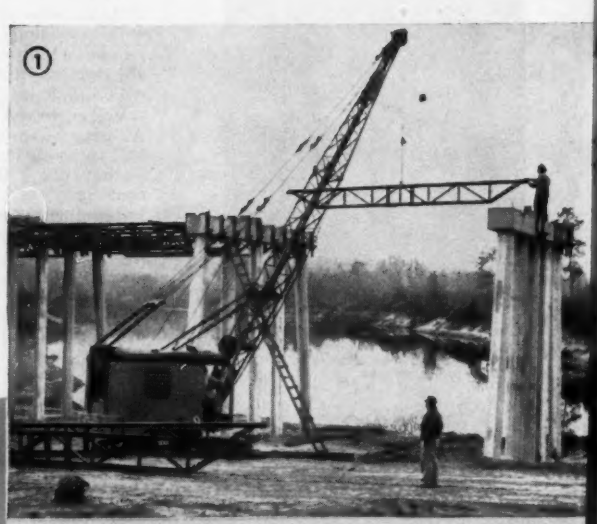






NORTHWEST

MODEL 25-D



① A new 25-D handling steel on a Southern bridge job.

② Another of the many 25-D Pullshovels now in service.

③ The 25-D is fast and smooth on clamshell work.

NORTHWEST

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES
⅜ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	⅜ Yd. to 3 Yd. Capacity

PULLSHOVELS	TRUCK CRANES
⅜ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity

Again—

A STILL FINER 3/4 YARD MACHINE

25-D

In keeping with Northwest's program of constant refinement Northwest announces a still finer tool —the 25-D, an advanced ¾-yd. machine as a Shovel, Crane, Dragline or Pullshovel supplemented by the Northwest 25-D, 18-ton Lifting Crane. This Northwest will make many new features available.

- New Independent High Speed Worm Boom Hoist
- True power load lowering
- Longer, wider crawlers
- Larger Drums—greater cable capacity
- Larger Drum Brakes and Clutches
- Larger Uniform Pressure Swing Clutches
- Improved "Feather-Touch" Clutch Control for still easier operation
- Grouped Lubrication

These are just a part of the new advances in the design of this workhorse of the ¾-yd. field that you can add to the many exclusive features always available on Northwest machines.

Don't buy a ¾-yd. machine without getting the whole story on the 25-D.

NORTHWEST ENGINEERING COMPANY
1503 Field Building, 135 South LaSalle Street
Chicago 3, Illinois

④

③

④ On those rock jobs the 25-D means even greater output.

ASK for complete details on this still finer NORTHWEST!

LONGEST PRESTRESSED CONCRETE SPAN IN U.S.—

BUILT WITH LEHIGH CEMENT

An extensive false-work system carried formwork for this record *single span* hollow box girder. Huge 700-ton concrete counterweights, which balance the dead load of the bridge, are housed in the two station buildings.

Engineers: Corps of Engineers, U. S. Army, Washington District

Architects-Engineers: Black and Veatch, Kansas City, Mo.

General Contractor: James McHugh Construction Co., Chicago, Ill.

Sub-Contractor For Prestressing: Prestressing, Incorporated, San Antonio, Texas

This beautiful *single span* bridge is only 7′ deep at center and 12′ deep at the ends. The roadway on the bridge is 16′ wide. Future plans call for a dual-lane highway running along the C. & O. canal.

• Arching 216′ across the C. & O. canal paralleling the Potomac River at Little Falls, Md., this cast-in-place, post-tensioned Washington Aqueduct bridge joins a riverside pumping station with an electrical sub-station and forms part of the new $6 million water supply project for Washington, D. C.

With Lehigh Cement used throughout, the prestressed concrete span supplants the 160′ center span of the Walnut Lane Bridge in Philadelphia (another "all-Lehigh Cement" project) as the longest in the country.

Once again, in a record-breaking job demanding the best in men and materials, Lehigh Cement has proved its value.

Note attractive architectural treatment of concrete surfaces of the sub-station. Over 60,000 barrels of Lehigh Cement were used in the entire project which includes the bridge, buildings, a dam and an outlet tunnel.

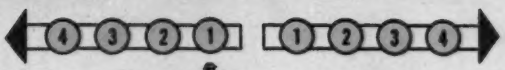
LEHIGH PORTLAND CEMENT COMPANY

ALLENTOWN, PA.

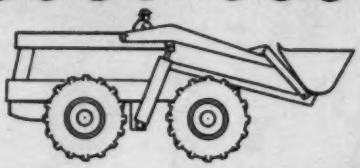
only the HYDRA-DRIVES® BDB

OFFERS ALL THESE MAJOR ADVANTAGES

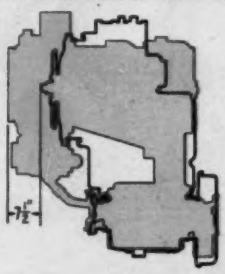
IN FULL-POWER SHIFT TRANSMISSIONS
for equipment from 60 to 175 h.p.

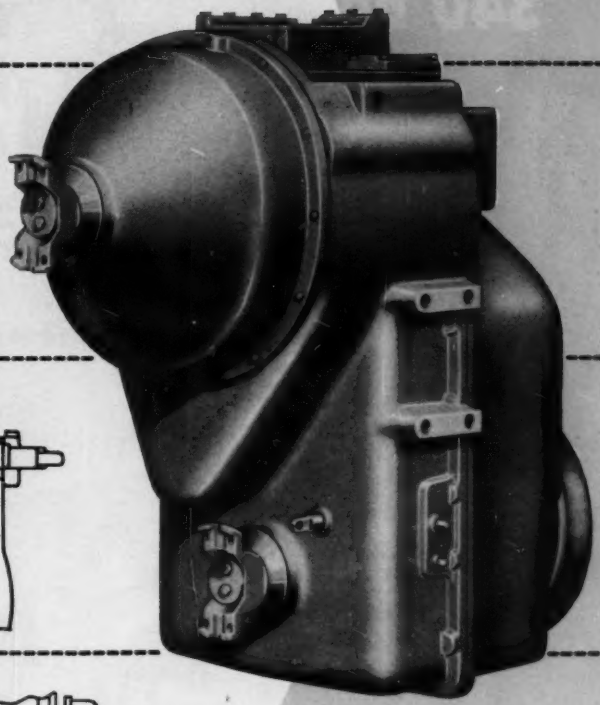


1. **4 speeds forward and reverse.** All power shifted! Provides maximum horsepower to load under all load conditions.

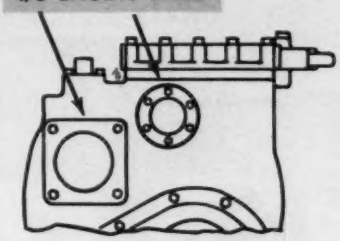


2. **Integral design.** Torque converter, transmission, oil passages, valving and oil sump are in *one* compact housing—7½" shorter than comparable models.

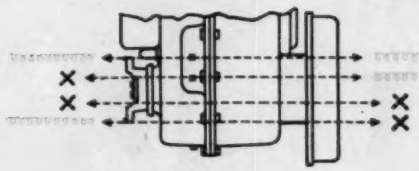




3. **Dual reduced speed pump drives.** Pumps can be driven at engine speed or ⅘ engine speed for longer life and increased horsepower to pump load. Single pump drive is also available.



4. **Full disconnect** provides four combinations of split drive . . . from torque on both shafts, to both shafts in disconnect.



SPECIALLY DESIGNED FOR SMALLER INSTALLATIONS

Rockwell-Standard's new model Hydra-Drives Full Power Shift Transmission is now available in sizes especially designed for smaller installations, such as front end loaders, fork trucks, scrapers, crane carriers, rubber tire tractors and military vehicles.

In addition, the Hydra-Drives BDB offers easier servicing and maintenance. There are fewer moving parts and bearings. The simple, rugged countershaft design and spur gears simplify maintenance.

HYDRA DRIVES
ROCKWELL-STANDARD CORPORATION
TRANSMISSION AND AXLE DIVISION
DETROIT 32, MICHIGAN

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2 NEW

Available in all these models

BE-12

DIESELS

that give you

More Horsepower

With 340 hp in the turbocharged 21000 and 230 hp in the 16000, you have the reserve power to operate smoothly and efficiently under extreme load conditions.

More Torque

. . . throughout the operating speed range. Torque is consistently high . . . provides the "umph" to do the job . . . walks into and *through* heavy loads.

Clean Design

Modern engineering means greater dependability, less maintenance, easy installation. To further simplify servicing, there is 98 percent interchangeability of parts between the Allis-Chalmers 16000 and 21000 engines.

Clean Exhaust

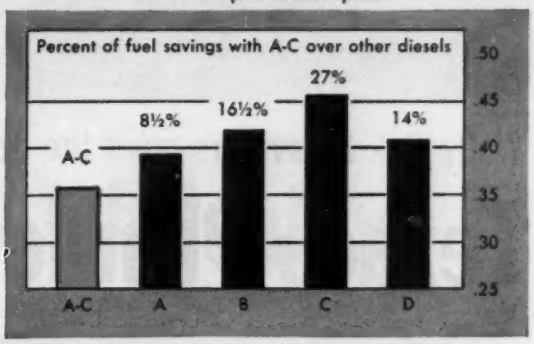
These diesels have a new combustion system* that provides *thorough* mixing of air and fuel for complete combustion. Fuel makes horsepower — not smoke!

*Write for full details on Allis-Chalmers' new combustion system.

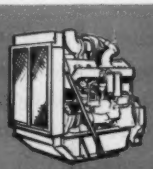
Greater Fuel Economy

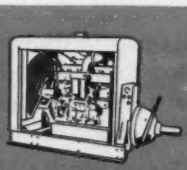
This chart compares fuel economy of the new Allis-Chalmers engines to others in their class. Economy like this gives you from 1 to 2½ hours of extra production a day doing the same kind of work — using even less fuel.

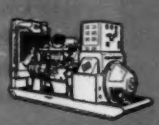
FUEL CONSUMPTION
Pounds per brake hp hr

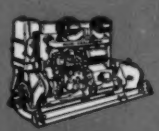


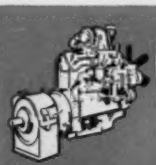
ENGINES


OPEN POWER UNITS


CLOSED POWER UNITS


GENERATING SETS


MARINE DIESELS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OFF-HIGHWAY VEHICLE ENGINES

Let your Allis-Chalmers dealer show you the many other features that put the *profit* in performance. Write for FREE new 16-page bulletin BU-540. Allis-Chalmers, Milwaukee 1, Wisconsin

ALLIS-CHALMERS

POWER FOR A GROWING WORLD

White Oak Excavators meet the deadline at Hogback Dam:

Texaco Plan lets White Oak lube

THESE SIX TEXACO LUBRICANTS, shown here with White Oak Excavators' Vice President, John Toffolon, and H. F. Porter, Texaco representative, permit their rig to lubricate *all* major equipment.

Contractor reports Texaco Simplified

RIVERTON, CONN.—White Oak Excavators, contractors for Connecticut's Hogback reservoir dam, have found that the Texaco Simplified Lubrication Plan makes their truck-mounted lube rig more useful than ever before.

"The Texaco Plan is really essential to getting the best use of our lube rig," says John Toffolon, one of White Oak Excavators owners. "Our Texaco Plan calls for just six lubricants to handle everything on the spread. We can take our whole lubricant inventory right out into the field. That's especially important to us because we use equipment made by practically every manufacturer."

Using no more than six lubricants on this $4,225,000 project has other advantages, too. For example, smaller inventory (six lubricants instead of 15 or 20) means less

HOGBACK PROJECT involves an earth and rock-fill dam to supply water for the greater Hartford, Conn. area. It is 135 feet high and 800 feet wide, and will create a 6½-billion gallon reservoir on the west branch of Connecticut's Farmington River. The dam is designed to discharge 92,000 cfs. It also has a 3 mile tunnel to the Barkhamstead reservoir, and a diversion tunnel designed to carry flood waters up to 31,500 cfs. White Oak Excavators are moving about 600,000 yards of gravel, earth and sand; 500,000 yards of rock; 95,000 yards of impervious soil core; and 30,000 yards of concrete. This requires a full range of construction equipment, all fully protected by the six lubricants comprising the Texaco Simplified Lubrication Plan.

rig handle all field lubrication

Lubrication Plan "essential to best use of lube rig"

handling, less storage space, less chance for misapplication. And, of course, the Texaco Simplified Lubrication Plan developed for the Hogback project comprises lubricants specifically chosen to meet the requirements of that particular job.

Here are the six lubricants, shown at the left with Mr. Toffolon: (1) For engines: *Texaco Ursa Oil Heavy Duty;* (2) for chassis, wheel bearing and general grease lubrication: *Texaco Marfak Multi-Purpose 2;* (3) for hydraulic units: *Texaco Regal Oil R&O;* (4) for transmissions and differentials: *Texaco Meropa Lubricant;* (5) for wire rope and open gears: *Texaco Crater;* (6) for track rolls: *Texaco Track Roll Lubricant.*

You'll save time and money by letting a Texaco Lubrication Engineer work out a Simplified Lubrication Plan tailored to the specific requirements of your project. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

ELECTRIC DRIVE BY R. G. LeTOURNEAU, Inc. LICKS STEEP GRADES AND MUD . . .

This Electric Arch is one of many working i timber forests all over the world. Designed speci fically for logging, it makes full use of its powerfu Electric Wheels to climb 40 per cent grades, thr deep mud and over the roughest trails.

Coming down with 30 tons of logs, the Arc makes profitable use of regenerative electric *brak ing that never wears out.* Infinite speed selectio

SNO-FREIGHTER puts tremendous power and traction of Electric Wheels to work traversing frozen North. Individually powered wheels and wide-base low-pressure tires keep it going over deep snow, icy footing.

AIRCRAFT TOW TRACTOR'S Electric Wheels develop tremendous torque, have infinite range of power control from dead stop to full speed. Starts are so gentle and smooth they are imperceptible to the eye.

STACKER lifts . . . carries . . . stacks 50 tons. Simple fingertip switches control all movements thru system of electric motors spotted on machine at point of work. No power take-offs or transmissions needed.

5 years of rugged performance prove

Advantages of All-wheel Electric Drive

Since 1953, R. G. LeTourneau, Inc., has been building big, mobile machines with every wheel driven by a unique application of diesel-electric power — the Electric Wheel. These machines are now at work on every continent of the world, proving daily that electric power and control can do more work in less time at lower cost than machines with conventional drive.

An Electric Wheel is essentially a self-contained prime mover — a DC electric motor and gear box mounted in its rim. Each machine's Electric Wheels work as a team, all powered by a diesel-electric generating system. The tremendous torque of this electric drive plus the high flotation of man-sized, low-pressure tires keep these machines rolling over rough ground, steep grades, mud, sand or snow.

Over the years our Electric Wheel System has been developed and perfected until it is now a completely integrated system of efficient, trouble-free *components—all of which we make ourselves*, even our electric motors. This careful development of components has permitted us to design and build *machines to fit specific jobs*, so that these jobs no longer need be limited to inefficient existing machines.

NOW IN EARTHMOVING

Earthmoving machines with all-wheel electric drive — one of them shown below — have recently been designed and built for the big jobs in construction and mining. For information please write 2395 South MacArthur, Longview, Texas.

from zero to full speed . . . and automatic sharing of power to wheels with best footing are other Electric Arch features which make profitable logging possible in areas that would be inaccessible with conventional equipment. Case histories of Electric Arch job performance prove the contribution this machine has made to logging, and are available on request.

R.G. LETOURNEAU INC

LONGVIEW, TEXAS

TRANSPORTER carries more than 30 tons of logs down rough trails. Regenerative electric braking never wears out . . . maintains absolute downgrade control automatically at any selected speed.

GENERATORS are built in one of our own plants, as are all the trouble-free, standardized components in the Electric Drive System. Here one undergoes quality control check before installation.

NEW EARTHMOVING EQUIPMENT—L-130-Ton Digging Scraper does bigger job (self loads 130 tons of dirt) at one pass than any other scraper ever built. Write for information on other BIG machines.

This 240,000-pound steam drum, built by Combustion Engineering for a large generating plant, is here being hoisted 120 feet into position by strong wire rope. It's a striking example of how . . .

safety rides on quality wire rope

You may never hoist loads as large as this 120-ton drum. But *safe, top quality wire rope is just as important to your own operations.* For, although the price of a "bargain" rope would be less, failure of such a rope could cost you thousands of dollars in wrecked equipment. Don't be a victim of false economy. Buy a wire rope that's a quality rope—buy Wickwire Rope.

5339

WICKWIRE ROPE — A CF&I PRODUCT

CF&I

LOOK FOR THE YELLOW TRIANGLE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

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Construction News From Washington

Washington, D.C.
February, 1959

Cash for Construction

Despite all the talk about Pres. Eisenhower's hold-down on federal spending, construction contractors can count on more—not less—government business during the year beginning next July 1.

The budget shows a 6% rise in spending for public works—direct federal construction, grants to states and localities for construction, military, and atomic energy construction. That brings the total U. S. outlay to $7.2 billion, highest for any year since World War II.

But this spending increase won't satisfy the Democrats, who won big majorities in both the House and the Senate in last fall's elections. The Democrats already are organizing to push through at least three programs that will come to a vote early: housing, airport construction, and aid for depressed areas.

Democrats also will fight against Administration plans to reduce federal spending in the years after 1960 for such programs as urban renewal and reclamation. For these programs spending will increase in 1960 because of past commitments, but a decline is inevitable after 1960 unless the Democrats override the President. Reason: the long time between Congressional approval of funds to start a project and the time when construction—and dollar outlays—reach their peak for the project.

Less Military Work—More AEC Jobs

Military construction will drop from the $2-billion-a-year spending level of this year, the budget makes clear. A drop of $320 million will bring military construction outlays down to $1.7 billion in 1960.

About $250 million of the 1960 total represents first-year spending on new projects, to be submitted to Congress later this session. The rest will go for continuing work on projects under way.

Missile construction will take an ever-increasing share of the spending total. Appropriations to the Air Force for construction of missile facilities amount to $150 million this year. Next year, construction for missiles will require much more.

While military construction is going down, spending by the Atomic Energy Commission is headed up. The budget proposed $280 million for next year, as against $240 million in fiscal 1959. This work would be financed in the main by $228 million of new construction money requested from this session of Congress. Appropriations for 1959 were $247 million, a big step-up from the $102 million voted for 1958.

Clear Track for Airports and Highways

Continued federal aid for airport construction is a sure thing. Last year the President vetoed a Democratic five-year, $575-million bill to extend and expand the grant program that is due to end June 30. This year his budget proposes a plan that would allow only $65 mil-

lion for fiscal 1960 and taper off to smaller amounts during the next three years. His decision to support continued federal aid will make it more difficult for him to veto again the $575-million bill the Democrats plan to revive.

Highways, of course, are sure of their full allotment of money through fiscal 1960. The budget shows the federal government's share of road construction outlays going up from $2.5 billion in the current fiscal year to $3 billion in 1960.

Beyond 1960, there will be no showdown in the accelerating pace of federal-aid highway construction. Congressional leaders have already made that point clear. In one way or another, Congress will keep the highway program rolling at full speed.

Record Funds for Water Projects

Going Army Engineer construction gets a green light from the President for fiscal 1960, but his budget signals a slowdown for reclamation. Even here, however, Interior Secretary Fred Seaton says he will rush supplemental money requests to Congress if reclamation projects go ahead faster than expected.

For all water and hydropower development programs, the Administration points out, it is asking the biggest spending total in history, $2 million higher than this year's peak of $1.708 billion. Actual construction included in this total for 1960 amounts to $1.1 billion.

For construction work, the budget would give the Army Engineers $711 million as compared with $644 million this year. It gives the Bureau of Reclamation $209 million (up $11 million from this year); and other agencies get $140 million.

These money requests for fiscal 1960 contemplate stretching out construction on some projects, the Administration admits. But the budget pretty well lays the ghost of possible holdbacks in contract awards for the 63 new starts that the last Congress voted.

Some of these 63 projects won't be put under contract until after July 1. But Corps and Bureau officials flatly state that the jobs are going out for bids as soon as technical preliminaries, such as local cooperation and engineering design, can be completed. Work will begin on the whole $500 to $600-million bundle of new starts before many months.

Budget Puts Brakes on Building Program

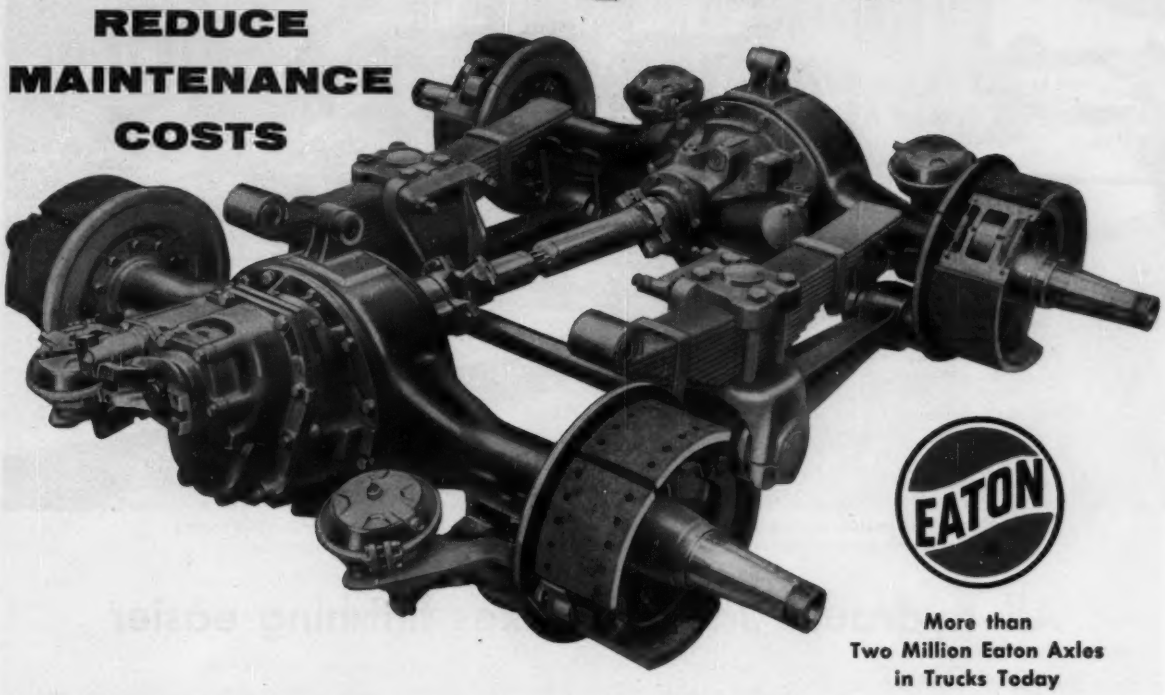
Federal building construction plans hit a snag in the budget. The President would like to slow down the federal building construction program throughout the country.

His intent is not revealed in the spending figures for this work. The budget calls for expenditures of $148 million on these structures in 1960, up $45 million from the current year.

Rather, the purpose shows up in the budget policy of opposing new starts in fiscal 1960 for federal buildings. Congress, of course, may have different ideas.

NEW EATON TANDEMS haul more legal payload—

REDUCE MAINTENANCE COSTS



More than Two Million Eaton Axles in Trucks Today

EATON TANDEMS effect important savings in overall length and gross vehicle weight—permit the hauling of maximum legal payload. While saving some 400 pounds of weight (in the 38 Series), Eaton has actually achieved *greater strength* through improved design and metallurgy and the use of Eaton Inductalloy Axle Shafts.

This greater stamina—plus simpler construction, fewer parts, and easier servicing—means lower maintenance cost.

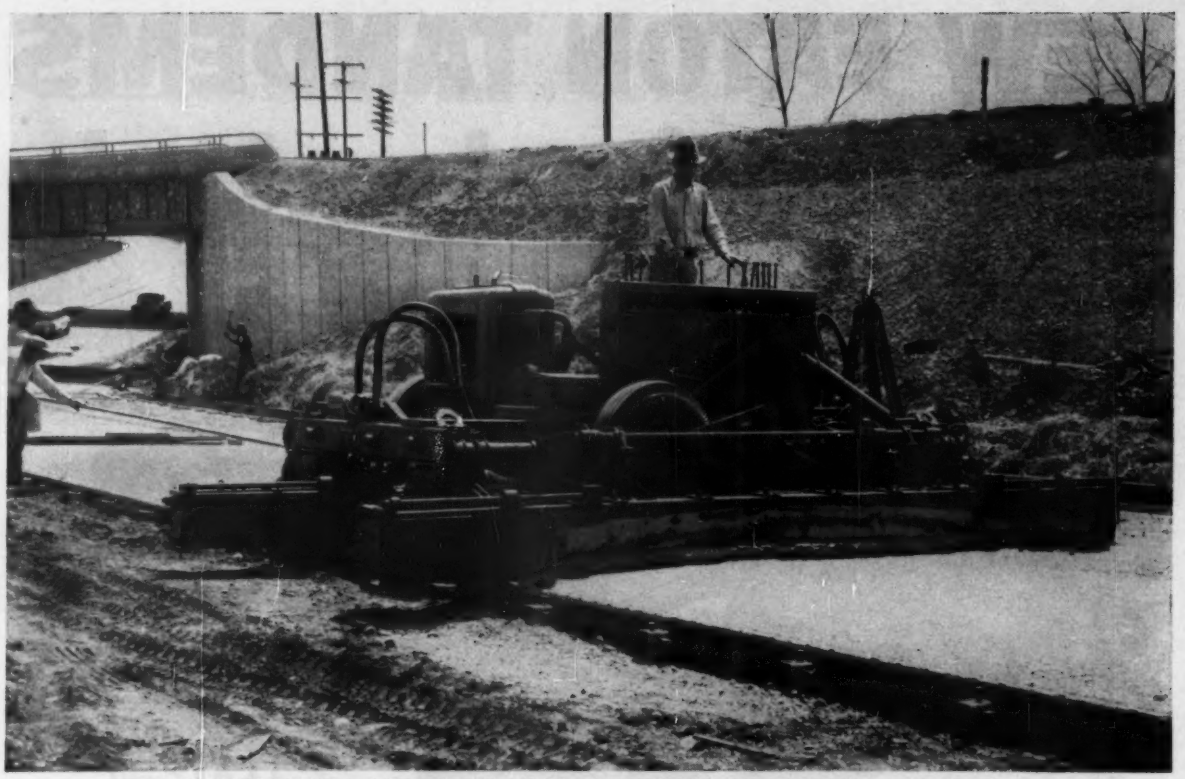
Although announced only six months ago, the outstanding performance and dependability of these new Eaton Tandems have been proved conclusively, both in the testing laboratory and when subjected to the severe conditions of heavy-duty hauling. They are available with single reduction, two-speed, or planetary double reduction axles, in a wide range of gear ratios. Ask your truck dealer for complete information.

- ★ Save more than five inches in OAL*
- ★ Save 400 pounds of GVW*
- ★ Simpler, more compact design
- ★ Fewer parts
- ★ Easier servicing
- ★ Inter-axle differential with lock
- ★ Inductalloy Axle Shafts

*38 Series

EATON — AXLE DIVISION — **MANUFACTURING COMPANY**
CLEVELAND, OHIO

PRODUCTS: Engine Valves • Tappets • Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Gears • Hydraulic Pumps Truck & Trailer Axles • Truck Transmissions • Permanent Mold Iron Castings • Automotive Heaters & Air Conditioners Fastening Devices • Cold Drawn Steel • Stampings • Forgings • Leaf & Coil Springs • Dynamatic Drives & Brakes



THIS INTERCHANGE, with its varying slab widths and super-elevated curves, is typical of much of today's work on which the self-widening, diagonal-screed Jaeger "JX" finisher is of greatest advantage.

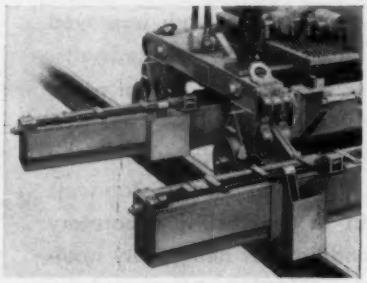
All-hydraulic Jaeger makes finishing easier

IT DOES EVERYTHING YOU HAVE TO DO ON TODAY'S WORK, including finishing flared and offset widths, pitched slab, super-elevated curves and interchange work requiring frequent lane changes.

And everything it does is performed by hydraulic power — fast, precision-smooth and under fingertip control. Beyond the engine and its master clutch there are no mechanical transmissions, clutches, power-trains, differentials or gearshifts to require maintenance, adjustment or repair. Gear-type hydraulic pumps power every function—the variable-speed traction and screed drives, screed lift and swing, machine self-widening, and transportation wheels.

For finishing pitched slab and super-elevated curves, Jaeger "JX" Type, with hydraulically-adjustable diagonal rear screed, lays the material solidly against the higher form. No conventional transverse screed finishers can do this. For flared slab work, hydraulic self-widening, with infinite width adjustability up to 6′, can be supplied. Hydraulic levers control all these functions.

Ask your Jaeger distributor to give you more information — or send for Catalog F8.

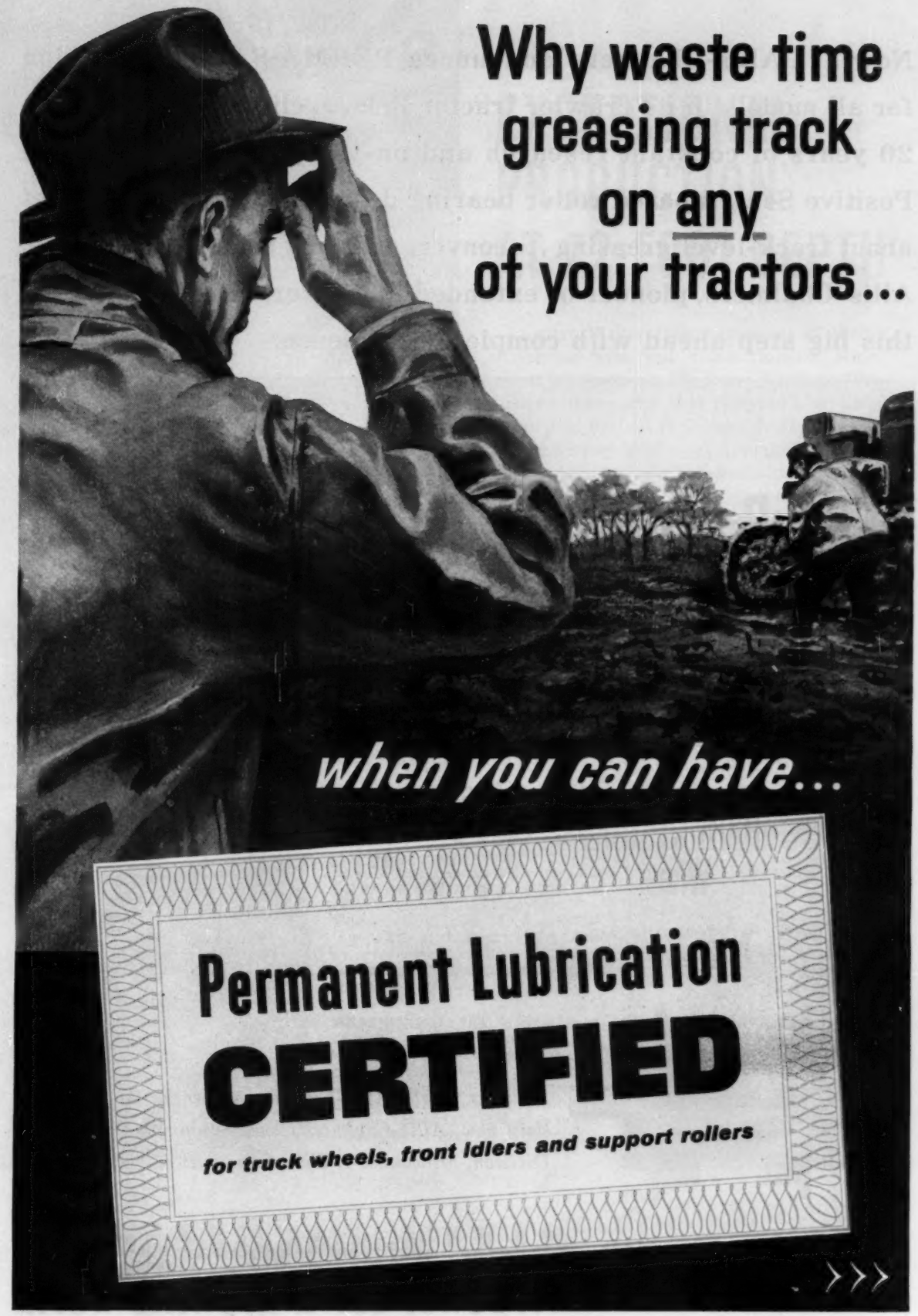


INFINITELY ADJUSTABLE END SHOES: 6″ to 36″ screed extensions are available, including 36″ extensions having end shoes adjustable on screws, turned by ratchet lever. With 36″ extensions at both ends of screed you have 6′ infinite width adjustability to match 6′ telescopic adjustability of machine frame.

CHANGING WIDTH ON OFFSET WIDTH JOBS: Transportation wheels, lowered by hydraulic power, raise one side of finisher to quickly change width to new form setting. On flared slab, changes can be made without raising machine. Telescopic frame can be extended mechanically or by hydraulic power.

THE JAEGER MACHINE COMPANY

800 Dublin Ave., Columbus 16, Ohio

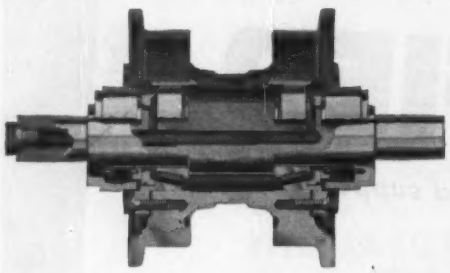

Why waste time greasing track on any of your tractors...
when you can have...
Permanent Lubrication
CERTIFIED
for truck wheels, front idlers and support rollers

Now . . . Allis-Chalmers announces PERMA-SAFE lubrication for all models in its crawler tractor line . . . climaxing more than 20 years of constant research and on-the-job experience with Positive Seal, tapered roller bearing design. Now you can forget about track-level greasing . . . convert that lost time to profit time. Allis-Chalmers, pioneer of extended lube intervals, lets you take this big step ahead with complete confidence.

Permanent Lubrication CERTIFIED

The Positive Seal PERMA-SAFE Wheel

for truck wheels, front idlers and support rollers on all models of Allis-Chalmers crawler tractors



See your nearby Allis-Chalmers dealer for the full story now. Allis-Chalmers Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with ALLIS-CHALMERS

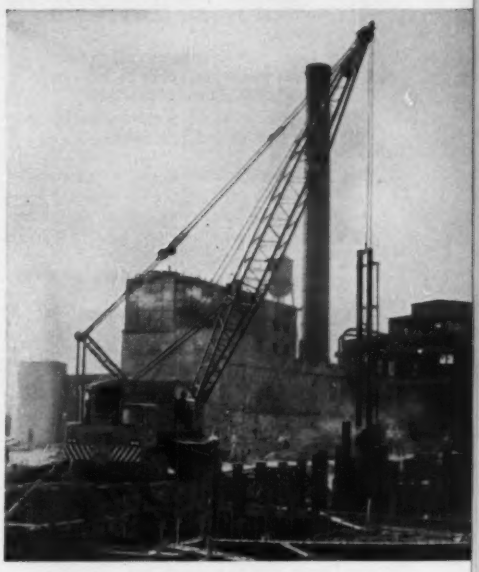
. . . power for a growing world

"EXCEPTIONAL PRODUCTION" AT 22-FOOT DEPTH

. . . says Walter Hiller, president of Walter Hiller and Sons, Inc., Good Thunder, Minn., about his American 300 Series Backhoe. "Production was above that expected" he added about this job at Chanhassen, Minn. Ditching through heavy, sticky clay at depths to 22 feet, a 10″ sewer line goes in faster with American's power and smooth cycling plus clean digging that practically eliminates hand work. Operator Jim Hiller says ". . . the American can really produce. Easiest operating machine I've ever been on!" You'll get exceptional production on every job with versatile, dependable American Backhoes. Call your American Distributor—he has all the facts—will help you select the machine, the front *exactly right* for your operation!

TOUGH ROCK WORK proves American Shovel durability and performance beyond a doubt. This American 575 Shovel owned by Osmundson Bros. Construction Company of Adams, Minn., is working a pit at LeRoy, Minn. Ask owners—operators how they like American . . . shovels work proved to do your job *best!*

HANDLING A PILE HAMMER is this 40-ton capacity American 599 Series Truck Crane owned by Don Fruchey, Inc., Ft. Wayne, Indiana steel erector. This big capacity crane provides exceptional stability on the heavy lifts and long boom jobs every erector encounters.



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A SOUND INVESTMENT FOR CONCRETE CONSTRUCTION!

LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

ON YOUR CONSTRUCTION:

1. Consider the investment in design, materials and labor (to mention a few).

2. Then consider how important safe, secure *watertight* concrete joints are.

3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops —a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

- Corrugated ribs grip concrete, insure an everlasting bond between joints.
- Finest polyvinyl plastic resists chemical action, aging, severe weather.
- Takes just seconds to nail to form . . . easy to cut and splice on location (prefabricated fittings available).
- There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

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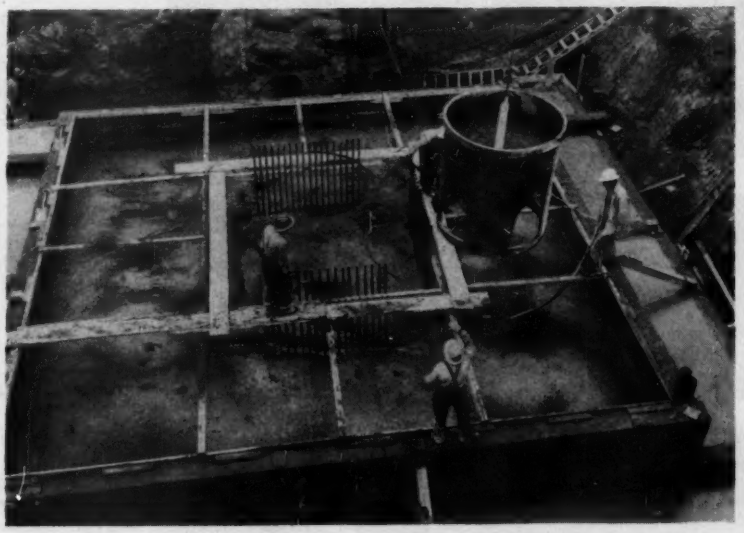
Job Talk . . .

Railporter Carries Forms, Reinforcing

During construction of a bridge over the Fox River on the Illinois Toll Highway, Arcole Midwest Co. modified a standard Rex Railporter to make it carry steel and forms as well as concrete.

With timber saddles made of scrap lumber fitted over the carriage that ordinarily supports the concrete bucket, the Railporter carries reinforcing steel on either side. Wood prongs that project vertically from the timber crosspieces hold plywood forms. Simply replacing the timber saddles with the standard concrete buckets makes the Railporter a concrete carrier again.



Heavy Timbers Form Pier Footings

Footing forms made up of 12x12 timbers are much heavier than ordinarily used on bridge pier construction, but contractor Scheuman & Johnson find them easy to handle and tough to damage. And they don't have to fuss with ties or stuts to hold the forms in place.

The job involves forming and concreting seven piers for the new high-level bridge that will carry the Seattle Freeway over the Lake Washington Ship Canal.

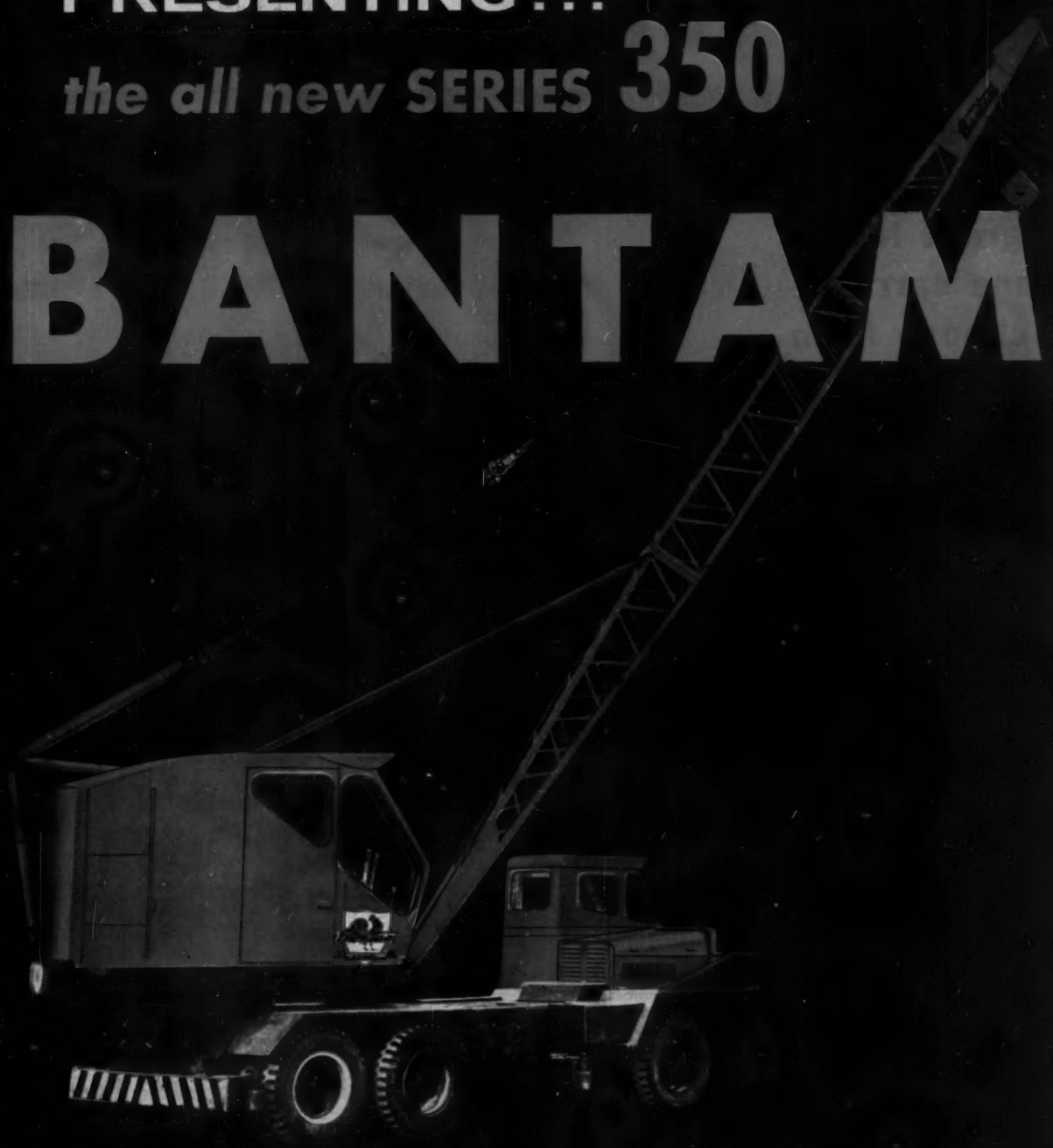
The contractor uses two sets of timbers for each footing. Each set is composed of 16 timbers, four high on a side of the square. Timbers in the bottom level are

continued on page 28

PRESENTING . . .

the all new SERIES 350

BANTAM



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11-ton capacity

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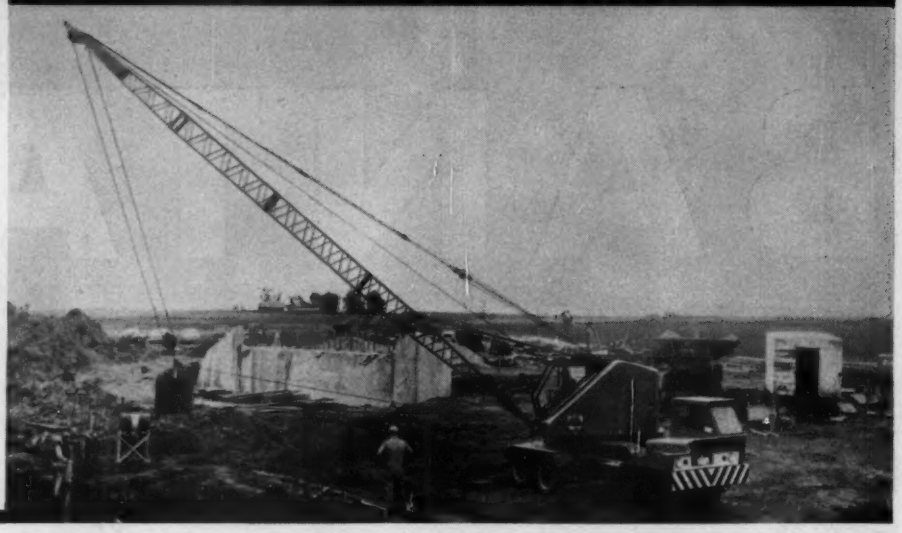
NOW...3 ALL-NEW
More capacity . . . more

4 great NEW crane carriers to choose from

BANTAM BUILT...
job-matched
to fit YOUR needs

New Crane Carrier Model T-350



NEW design standard equipment boom hoist ***NEW*** increased h.p., gas or diesel ***NEW*** increased line pulls ***NEW*** deeper digging back hoe ***NEW*** trunnion base ***NEW*** central instrument panel ***NEW*** huskier, deep-section boom up to 70 feet ***NEW*** more flexible transmission choice ***NEW*** cleaner, simpler design throughout ***NEW*** more rugged carriers ***NEW*** flexible, higher production attachment line

Equip your **BANTAM** as you want it with more than 25 different options

Here's the greatest flexibility you have ever seen in a crane-excavator—literally dozens of option choices to meet your own specific job requirements! Four different carrier mountings answer every need for capacity and price . . . 3 types of boom hoists (1 standard, 2 optional) . . . power load lowering for all models . . . gasoline, diesel, LP-gas or electric drives . . . torque converter . . . 2-speed transmission . . . wide choice of counterweights available . . . 2 different fairleads . . . electric or manual dipper trips . . . house-type or all-vision cab, etc. Select the ideal combination for greatest profit on your work. **And remember, you can use any of 11 different quick-change attachments—all BANTAM-built!**

Get the facts . . . get the prices
see your SCHIELD BANTAM Distributor

BANTAM MODELS
flexibility . . . greater work range

THE BIG, NEW BANTAM 350 is ready!

After nearly 3 years of development and testing, the new BANTAM is here—with full 11-ton lifting capacity. Again the aggressive, do-it-better policy of the industry's outstanding leader makes the big news in shovel-cranes. And it's a proved machine—the finest, most thoroughly engineered and field-tested rig ever offered in its field! Exhaustive electronic strain gauge testing proves its superior strength, stamina and stability. Actual on-the-job field testing for more than a year proves its job-handling capabilities.

Bigger production . . . increased versatility

Equally capable as excavator or crane, the new BANTAM 350 has amazing work range, now handling bigger jobs than ever, faster than ever. Instant-acting, trouble-free mechanical controls give you the fastest work cycle in the industry—and biggest production ever achieved in a machine anywhere near its popular size.

The new 350's are far and away the greatest BANTAMS ever built—worthy successors to the famous "35" series which were bought by more users than any single model in history. They are now at your BANTAM distributor's. See them!

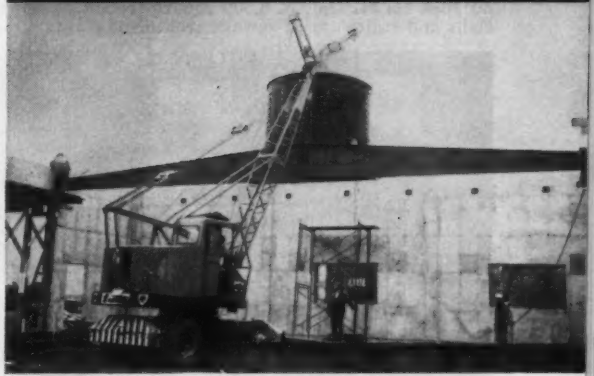
SCHIELD Bantam Co.

World's largest producer of truck crane-excavators

New Crawler Model C-350

Features stronger, more rigid car body, with 2 side frame sizes—standard and long—for extra stability on crane work up to 8 tons. Both are available with wide base extensions and high-clearance side rails to meet every ground condition. The C-350 offers full-reversing, 2-speed travel transmission and new in-cab digging lock (optional) for faster moves when trenching. It has maximum digging depth of 18'10" with new, long back hoe. Hydraulically actuated buckets also available for standard and long back hoe on all 3 models.

New Self-Propelled Model CR-350



Offers new optional 4 x 4 drive and new automotive-type power steering without mechanical linkage. Independent travel, swing and hoist plus faster travel speeds make it a highly maneuverable, 11-ton self-propelled rig for all kinds of on-and-off-pavement assignments, such as service line work, yard handling, etc. By-passing box-beam outriggers provide maximum lifting stability over end or side.

For an eye-opener on earning ability, get behind the controls of the ALL-NEW BANTAM 350!

or use this handy coupon TODAY

Schield Bantam Company
221 Park Street, Waverly, Iowa
Please send information on ☐ Model T-350 Carrier Mounted
☐ Model C-350 Crawler ☐ Model CR-350 Self-Propelled

Name_____

Title_____

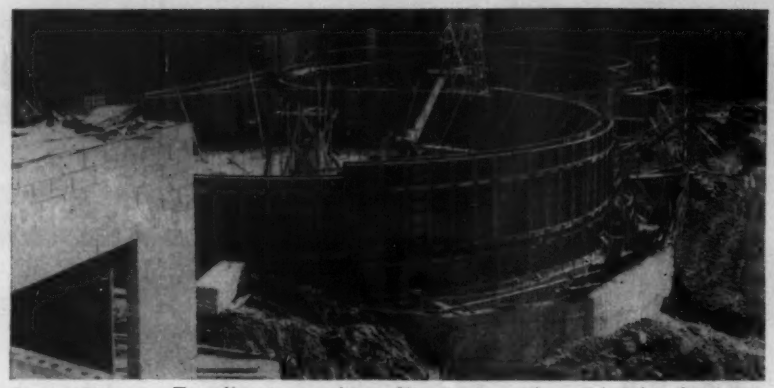
Company_____

Address_____

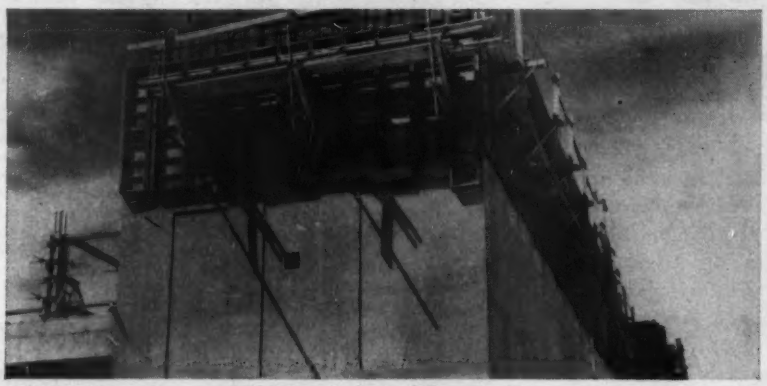
City_____ State_____

WATER and SEWAGE PLANTS

Constructed with Symons Forms



Sewage Plant . . . Two digestors and two filter tanks with wall heights from 8 to 23 feet formed with 12,000 square feet of Symons Forms.



60' High Bin Section . . . 8,500 square feet of Symons Forms were used on walls, slabs and stairways of sewage treatment plant.

10 Million Gallon Reservoir . . . Continuous pours of 50 ft. sections in heights up to 18 ft. Concrete was placed through pouring pockets.

Use of Symons Forms is not confined to one type of job. They can be used efficiently for almost any type of construction and on any height of wall. Symons Forms, Shores and Column Clamps may be rented with purchase option—rentals to apply on purchase price. Information on Symons products and services sent FREE on request.

Symons CLAMP AND MFG. CO.

4255 Diversey Avenue **Dept. B-9** **Chicago 39, Illinois**

MORE **SAVINGS** FROM **SYMONS**

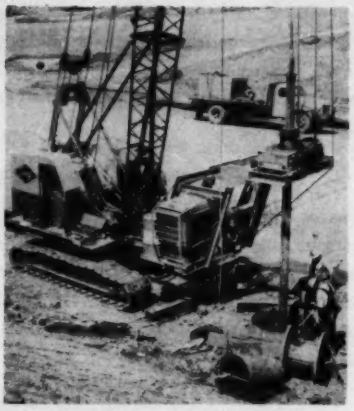
JOB TALK . . .
continued from page 24

43 ft long; those in the second lift are 30 ft long.

The timbers are held together at the corners with ¾-in. bolts. Since the lower section varies in size from pier to pier—they ranged from 40 to 43 ft square—holes are drilled at the ends in three different positions. A 8x8x ½-in. angle reinforces each corner. In addition, cables looped around the frame and tightened with coffin jacks hold the timbers.

A mobile crane places the form sections, which are carried from pier to pier on a lowboy. Forms are handled with hoist lines passed through lifting eyes in the top timbers. It only takes 1½ hours to position the forms.

Jacks push the timbers loose from the concrete during stripping. The contractor expects to use each set of forms 14 times, then cut the timbers up for further service as mats for heavy equipment. Cost of form material ran around $2,000.



Crane Mounts Drill Rig

Contractor Harry Newton, of Graham, Tex., devised his own rig for boring 54-in.-dia. holes that had to be sunk 130 ft to seat bridge piers for an overpass.

Newton built a steel frame on the front of his Lima crawler crane to house a 133-hp Waukesha engine that powers the drilling rig. An extension of the frame holds an Ideco drilling machine. A two-step chain drive connects the engine and the rotary drilling rig. In between the engine and the first chain sprocket, a Twin-Disc three-stage torque converter regulates drill speed to suit hardness of the soil.

When You Must R-E-A-C-H O-U-T and *DRAG* for PROFITS—

wix®

PRESCRIPTION FILTRATION puts you DOLLARS AHEAD!

Higher operating and maintenance expense, plus the rising costs of parts, supplies, and equipment combine to put the squeeze on contractors' profits. But, when you get more work out of your gasoline and diesel powered equipment with less time out for down time, *you save money.* And, money saved is PROFIT in your business!

Only WIX Oil and Air Filter Cartridges give your engines the exclusive Prescription Filtration that keeps out damaging dirt, grit, dust, and gummy sludge—keeps 'em running longer, more efficiently, and more economically. WIX Cartridges are built to take it—under the most grueling working conditions and tightest time schedules!

A WIX *extra* is the FREE Filter Survey of all your engines that shows the correct lube, fuel, and air filter Cartridge replacements for each. Your local WIX Wholesaler will stock a reserve supply of the particular Cartridges *you* need—no heavy inventory for you—one convenient source for fast filter service. Ask your Jobber, or write us—TODAY!

WIX CORPORATION • GASTONIA, N. C.

In Canada: Wix Corporation Ltd.: Toronto

WIX Filter Cartridges are engineered specifically for every engine in construction service . . . gasoline or diesel—mobile or stationary—for lube, fuel, and air. There are WIX replacement Cartridges for:

CATERPILLAR—DETROIT DIESEL
INTERNATIONAL
LE TOURNEAU—MURPHY
ALLIS CHALMERS
and all other
Construction Equipment

FILTER SURVEY

Accept this big aid to sound and economical maintenance . . . a physical check made by factory trained filter specialist.

FOR YOUR SPREAD

WIX CORPORATION Dept. CM-2
GASTONIA, N. C.

Please send full particulars of your FREE Fleet Survey that saves dollars and down time.

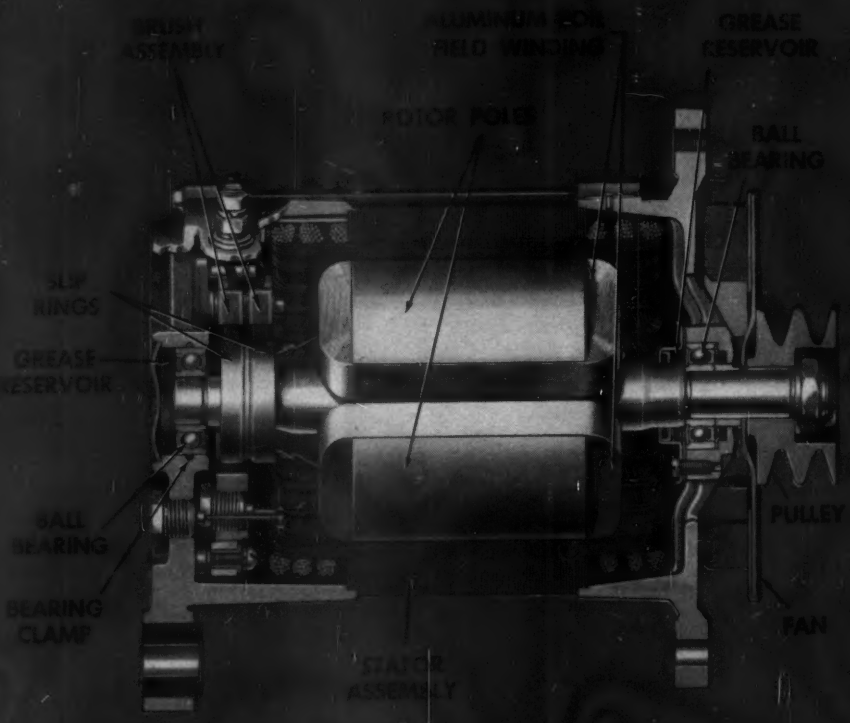
Name_____

Company_____

Address_____

City_____ Zone____ State_____

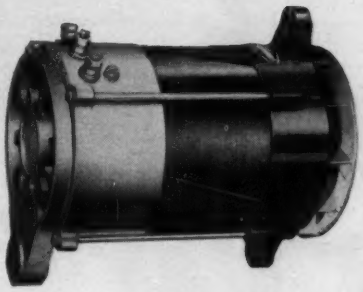
NOW! REAL CHARGE-AT-IDLE,

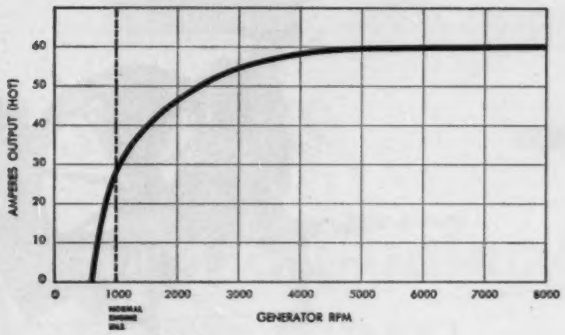


PROGRESSIVE ENGINEERING MAKES THE DIFFERENCE

UP TO TWICE THE TOTAL OUTPUT

WHEN YOU REPLACE STANDARD D.C. EQUIPMENT WITH DELCO-REMY'S NEW SELF-RECTIFYING A.C. GENERATOR





Here's a completely new generator from Delco-Remy *specifically designed* to take care of cars and trucks with extra-heavy electrical loads under all traffic conditions . . . to increase battery life by eliminating deep cycling.

Designed to mount interchangeably with most standard d.c. generators, this compact new unit is only 5¾" in diameter and weighs just 31 pounds. The a.c. design eliminates commutation problems, providing extra-long brush life . . . and the ball bearings are "lifetime" lubricated so that no attention is required between engine overhaul periods. Six specially developed silicon rectifiers built into the end frame eliminate the need for space-consuming external rectifier units, reducing installation time and cost to a minimum.

Be sure to specify this new self-rectifying a.c. generator along with its companion transistor regulator (either full or transistorized model) on your new special-duty equipment for 1959. This all-new power team is still another example of Delco-Remy progressive engineering at work for you.

GM GENERAL MOTORS

GENERAL MOTORS LEADS THE WAY—STARTING WITH Delco-Remy ELECTRICAL SYSTEMS

DELCO-REMY • DIVISION OF GENERAL MOTORS • ANDERSON, INDIANA

When the chips are down...

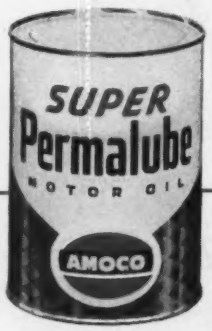
Super Permalube Motor Oil provides smooth sailing for the stormiest of lubrication problems.

Super Permalube Motor Oil has truly earned the title of "workhorse tool." The finest engine oil made, it fulfills the needs for heavy duty as well as light duty service.

As an all-weather lubricant, Super Permalube is specially designed for high-compression engines. It saves engines by providing less wear, scuff and scoring. It provides the best protection against valve sticking, chemical attack on bearings, piston varnish, piston ring sticking, rusting and combustion chamber carbon formation.

Because of its versatile viscosity, Super Permalube maintains efficient lubrication at all temperatures. This reduces starting strain in cold weather (saving batteries), resulting in less oil and fuel consumption.

Super Permalube cleans as it lubricates. Engines stay clean, run better and give maximum economy with unsurpassed performance. Also, its peculiar make-up assists in keeping carbon deposits from forming. Thus, in gasoline engines it keeps octane requirement almost down to that of a new engine and in diesel fueled engines it helps solve many maintenance problems.



SUPER PERMALUBE MOTOR OIL

When you want top performance you want Amoco Lubricants

American Oil Company, 555 Fifth Avenue, New York 17, N. Y.

AMOCO ALSO PRESENTS...

Amoco HDX Oil
Amoco Superior Diesel Oils, S-1, S-2, S-3
Permalube Gear Oil
Perma-Flo Oils
Permalube All-Purpose Grease No. 158
Vesuvius "X" Gear Compounds

This scraper is one of a fleet operated by Ball and Simpson, contractors of Berkeley, California. The equipment works 16 hours a day hauling 25-ton loads of dirt and rock for a new superhighway. The company keeps this project on schedule by using B.F.Goodrich Rock Service tires. The report: even under tire-killing work conditions, Rock Service tires cut delays to a minimum—give as many as 2,000 hours' service before retreading.

B.F.Goodrich

Rock Service prevents unnecessary tire failures!

THE new B.F.Goodrich Rock Service —unlike an ordinary tire—is built to its inflated shape. This FLEX-RITE construction permits *uniform* flexing — no localized stresses that often cause unnecessary tire failures!

Look at the husky double chevron tread. The cleats bite in to give maximum traction and skid resistance in forward or reverse. Under the tread is the B.F.Goodrich FLEX-RITE NYLON cord body. It withstands double the impact of ordinary materials, resists heat blowouts and flex breaks. The B.F.Goodrich FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over! No wonder the B.F.Goodrich Rock Service tire gives longer service in mine, quarry or dirt-moving jobs!

Western Contracting Corp. operates 2,000 vehicles to build highways, dams and air bases all over the country. Here the job is earth moving for a new runway at Wright-Patterson Air Force Base, Fairborn, Ohio. B.F.Goodrich Rock Service tires have substantially increased hours of service and substantially reduced delays due to tire failure (saving between $300 and $600 per hour, the company reports).

Smileage!

Opens up new opportunities

Call the district office nearest you for B.F.Goodrich tires and tire service

Albany, New York 4-7181	Fargo, North Dakota . . . . . AD. 2-7462	New York, New York. . . . . OR. 9-0330
Atlanta, Georgia . . . . . DR. 8-4561	Grand Rapids, Michigan . . . CH. 1-2609	Oklahoma City, Oklahoma . . JA. 5-1587
Baltimore, Maryland . . . . . BE. 5-6705	Harrisburg, Pennsylvania . . . CE. 4-5974	Omaha, Nebraska . . . . . PL. 8133
Birmingham, Alabama . . . . FA. 2-0364	Hartford, Connecticut. . . . . JA. 5-1186	Philadelphia, Pennsylvania . . JE. 5-5800
Needham Heights, Mass. . . . HI. 4-6100	Houston, Texas . . . . . CA. 7-5228	Pittsburgh, Pennsylvania . . . HI. 1-5200
Buffalo, New York . . . . . RI. 1258	Indianapolis, Indiana . . . . . ME. 7-2508	Portland, Oregon. . . . . CA. 6-3621
Charlotte, North Carolina . . . EX. 9-5621	Jacksonville, Florida . . . . . EL. 6-4167	Richmond, Virginia. . . . . EL. 5-6573
Chicago, Illinois . . . . . ES. 8-8800	Kansas City, Kansas . . . . . MA. 1-4400	St. Louis, Missouri. . . . . PR. 3-2600
Cincinnati, Ohio . . . . . BR. 1-7800	Los Angeles, California . . . . RA. 3-6692	Salt Lake City, Utah . . . . . DA. 2-2405
Cleveland, Ohio . . . . . PR. 1-0827	Memphis, Tennessee. . . . . WH. 8-6761	San Antonio, Texas. . . . . CA. 7-7543
Columbus, Ohio . . . . . AM. 8-8631	Milwaukee, Wisconsin . . . . DI. 4-5104	San Francisco, California . . . AT. 2-9620
Dallas, Texas . . . . . RI. 1-5601	Minneapolis, Minnesota. . . . LI. 5-2521	Seattle, Washington . . . . . MU. 2-4300
Denver, Colorado . . . . . TA. 5-1267	Newark, New Jersey . . . . . MA. 3-3317	Wichita, Kansas . . . . . HO. 4-6389
Detroit, Michigan . . . . . CR. 8-7000	New Orleans, Louisiana. . . . VE. 3-7231	

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Enter the B.F.Goodrich Truck Tire Mileage Contest. You can win a Thunderbird, or Corvette, or one of 310 other prizes. See your B.F.Goodrich dealer today for entry blanks.

B.F.Goodrich *truck tires*

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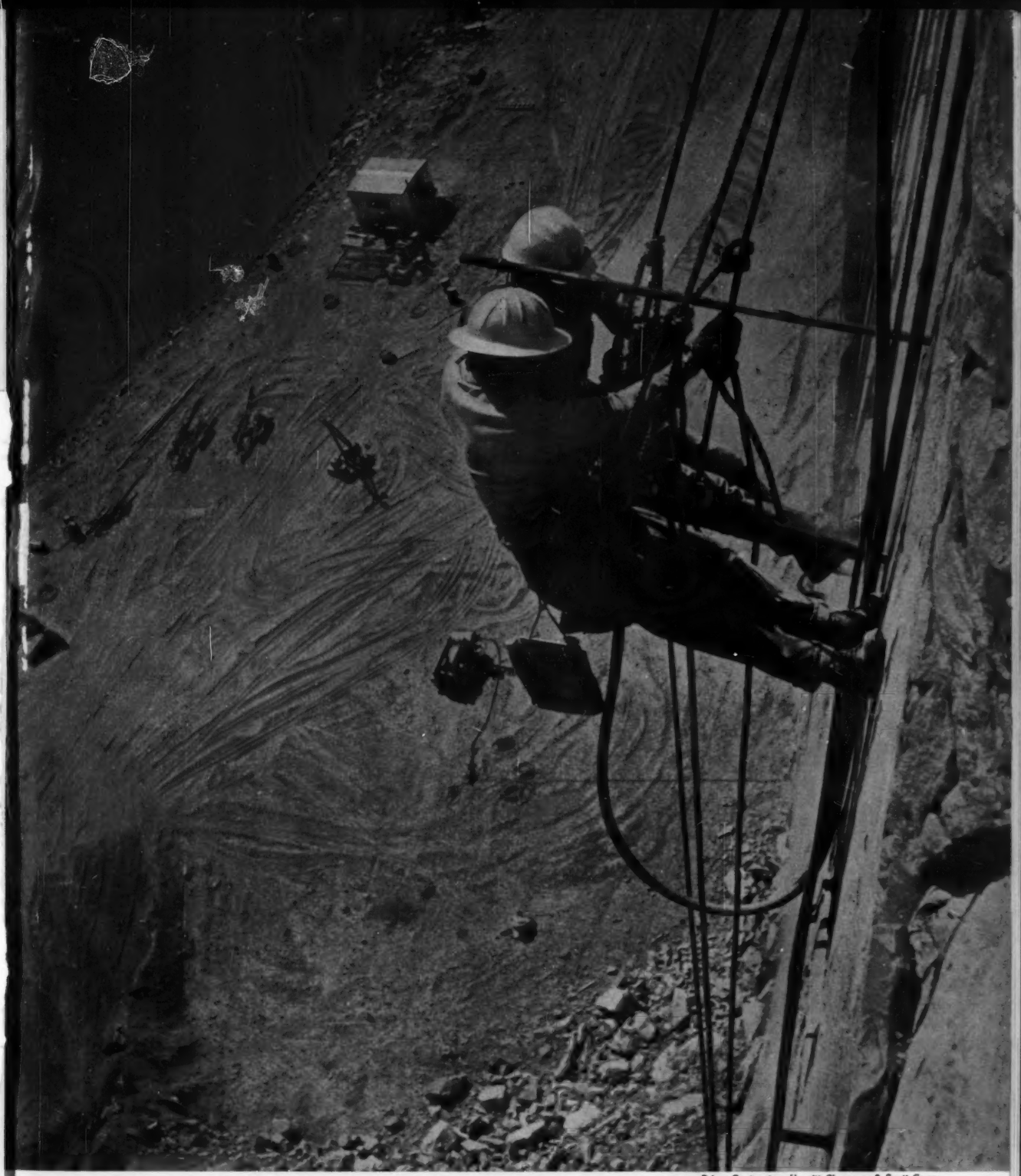
for tire savings

WITH THE NEWEST, BIGGEST OFF-THE-ROAD TIRE ON THE MARKET TODAY!



Prime Contractor: Merritt-Chapman & Scott Corp.

DRILL STEEL BORES BOLT HOLES AT GLEN CANYON DAM—One of the world's highest dams, Glen Canyon, is now under construction on the Colorado River in Arizona, a mere 12 miles from Utah's southern boundary. It is being built for the U. S. Bureau of Reclamation to provide a storage basin 186 miles long, and to furnish power to a five-state area. Upon completion, the dam, 1500 ft across its crest, will rise 580 ft above the river, and join the sheer 700-ft-high canyon walls. In the photograph above, Bethlehem Hollow drill steel is boring holes in the tough sandstone face of the canyon. Bethlehem anchor bolts, in 6 ft and 8 ft lengths, were later inserted in the holes to prevent the rock from spalling.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

SIOUX impact offer Torque

SIOUX Electric IMPACT WRENCHES

Sioux electric impact wrenches offer equal power in right or left hand rotation. The torque for each wrench is stated and certified. Their mechanical design offers exactly the same advantages as that of the air wrenches. Their exclusive reverse cap switch lock prevents reversing with the current on, and eliminates burning commutator brushes and switch contacts. They are unexcelled in performance.

BIG "SLUGGERS!"

The Sioux No. 320 and 322 air impact wrenches achieve a new high in power to weight ratio. Certified torque as shown in specifications with 8 points of power selection makes them most ideal for heavy duty work.

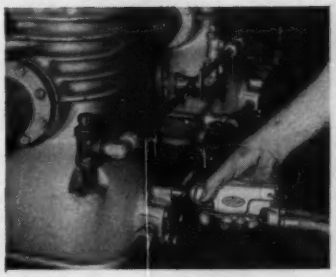
More than MEDIUM!

No. 315 and 316 are popular industrial and general use sizes with great versatility of use and power for extra punch. They're designed for use where power is required beyond that of conventional ½" drive wrenches.

Medium POWER

No. 315 and 316 cover a torque range adequate for many purposes. They're thoroughly tested and proven. Thousands are in daily use.

wrenches for every task!



CERTIFIED SIOUX POWER

SIOUX tells you the torque your air or electric impact wrench will deliver. (See specifications.) You don't buy just a wrench. You buy certified SIOUX power! Reversible power. And on air wrenches controllable power through eight point power selector.

PROVEN EFFICIENCY

Here, the advantage of the exclusive SIOUX mechanical design is revealed! You can expect your SIOUX air impact wrench to deliver *25% more torque* while *consuming 30% less air!* Less power is absorbed by the wrench itself. More is applied to the drive!

FIELD TESTED, TIME TESTED PROVEN DEPENDABILITY

The exclusive SIOUX impact wrench mechanical design has passed the toughest test of all . . . the test of time. Thousands have been giving dependable, trouble-free service for years.

REACTION BALANCED for Less Vibration Feedback

All SIOUX Impact Wrenches are "reaction balanced" for less vibration and torque feedback and for minimum operator fatigue. You can feel the difference!

ANGLE ATTACHMENT— used directly on the square of the impact wrench to reach those hard to get at spots.

Production type No. 313, 314!

AIR IMPACT WRENCHES

These models feature an exclusive remote air exhaust that takes exhaust 6 feet from the operator. Quiet, clean operation. Production type design with paddle switch, and 8 point torque selector.

No. 303 AIR IMPACT SCREWDRIVER

Same as above except takes ¼" hex drive shanks for clutch head, Reed and Prince, standard, and Phillips screwdriver bits, and for Allen type socket heads.

Compare the TORQUE! the QUALITY!

Cat. No.	AIR Square Drive	Cap. Bolt Size	Torque Ft. lbs. at 90 lbs. Air Pressure at Tool
313	3/8"	3/8"	60
314	1/2"	7/16"	75
303*	1/4" Hex		
315	1/2"	5/8"	.130
312*	7/16" Hex		
316	1/2"	5/8"	.195
317	5/8"	5/8"	.195
318	5/8"	3/4"	.250
319	5/8"	7/8"	.425
320	3/4"	1"	.750
322	1"	1 1/8"	1000

*AIR SCREWDRIVER Cat. No.	ELECTRIC Square Drive	Cap. Bolt Size	Torque Ft. lbs. in 10 sec. operation Right or Left
323	3/8"	7/16"	75
333	1/2"	7/16"	75
325	1/2"	5/8"	.125
330	1/2"	5/8"	.175
335	5/8"	5/8"	.175

ALSO NO'S. 260, 262, 242, 246 ELECTRIC SCREWDRIVERS

SIOUX's the BUY!

ALBERTSON & CO., INC. SIOUX CITY IOWA, U.S.A.

AIR IMPACT WRENCHES • AIR SCREWDRIVERS • DRILLS • "PELICAN" NUT ACCUMULATORS • FLEXIBLE SHAFTS • ELECTRIC IMPACT WRENCHES • GRINDERS • SANDERS • POLISHERS • SCREWDRIVERS • PORTABLE SAWS • VALVE FACE GRINDING MACHINES • ABRASIVE DISCS

NEW

MANITOWOC TRUCK CRANES

. . . Now you can get the famous Manitowoc crane performance on rubber

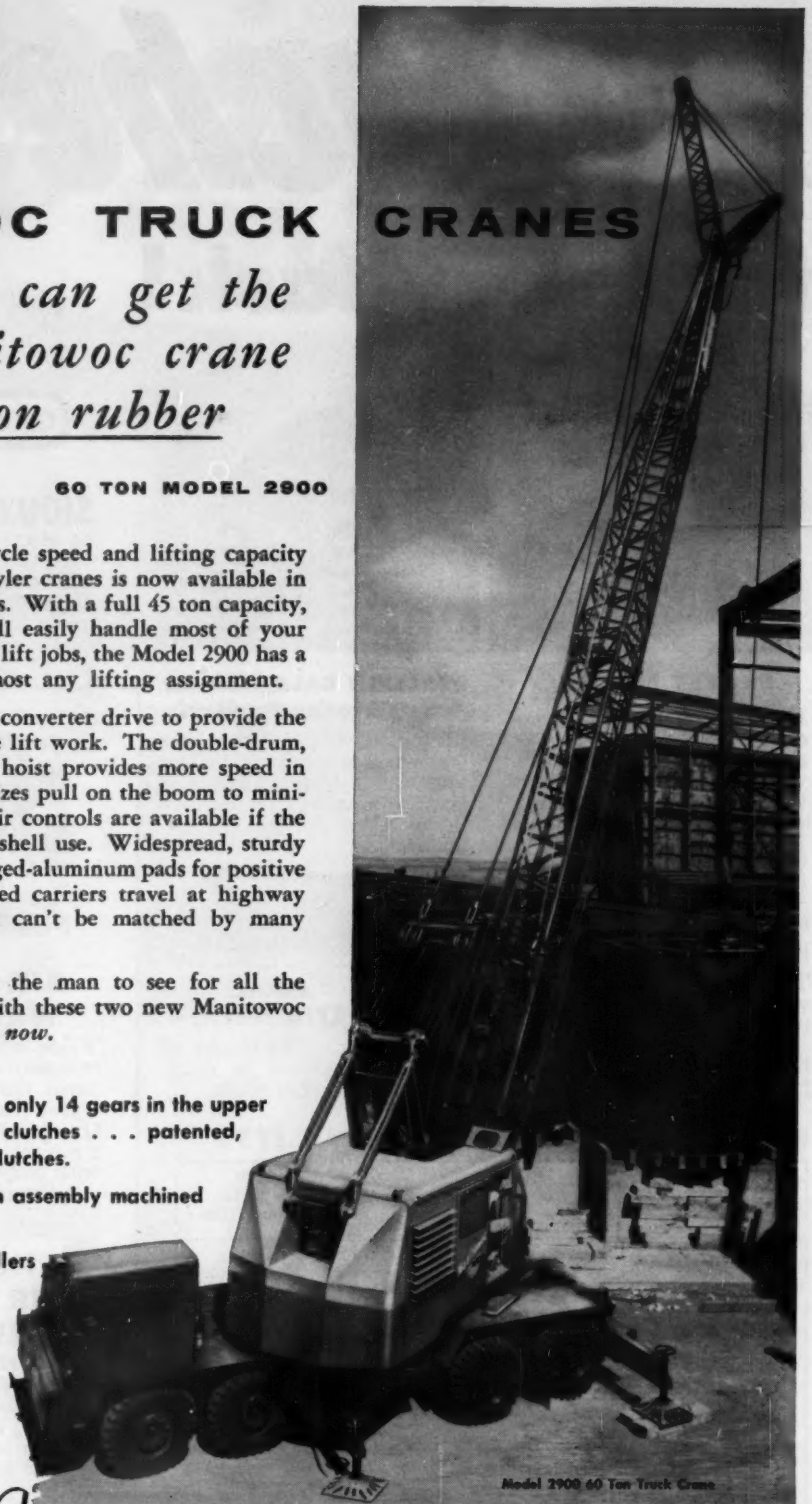
45 TON MODEL 2800 **60 TON MODEL 2900**

The superior precise control, cycle speed and lifting capacity you get only in Manitowoc crawler cranes is now available in two new Manitowoc truck cranes. With a full 45 ton capacity, the Model 2800 truck crane will easily handle most of your crane jobs. For the bigger, high lift jobs, the Model 2900 has a true 60 ton capacity to meet most any lifting assignment.

Both rigs feature smooth torque converter drive to provide the most accurate control for precise lift work. The double-drum, worm drive independent boom hoist provides more speed in raising and lowering, and equalizes pull on the boom to minimize cable wear. Short throw air controls are available if the rigs are put to dragline or clamshell use. Widespread, sturdy outriggers have heavy duty, bridged-aluminum pads for positive "high lift" stability. Big, rugged carriers travel at highway speeds, give you mobility that can't be matched by many smaller truck cranes.

Your Manitowoc distributor is the man to see for all the profitable advantages you get with these two new Manitowoc truck cranes . . . give him a call *now.*

- **Simple, power-saving design uses only 14 gears in the upper works. Precise, disc-type swing clutches . . . patented, plunger drum control on main clutches.**
- **Massive ring gear and roller path assembly machined from tough, rolled tire steel.**
- **Adjustable, self-aligning hook rollers with precise, 12-point adjustment to keep rollers perfectly matched with the roller path.**
- **Self-removing counterweight is standard equipment. Scientific load distribution assures legal load limit.**



Model 2900 60 Ton Truck Crane

Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 100 TON	1½-YD. - 5½-YD.	1¼-YD. - 6-YD.	1¼-YD. - 3-YD.

GMC

goes "full speed ahead" with

OPERATION "HIGH GEAR"

GMC pours on the power in the biggest engineering, design and quality-control program the industry has ever known . . . bringing you trucks unmatched for their rugged reliability and economical performance!

The biggest things in trucks today are happening at GMC!

Without fanfare, GMC has embarked on a giant engineering, design and quality-control program . . . Operation "High Gear".

You sense its impact everywhere you turn.

You find it in the alertness and feeling of pride all along the assembly line . . . and in the close teamplay between engineering, manufacturing, sales and service.

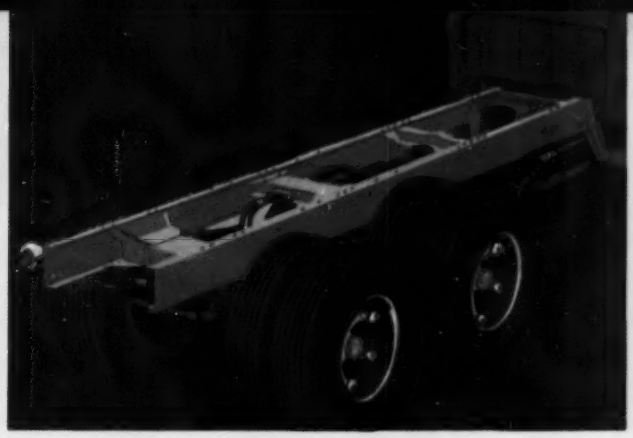
You see it in the great new choice of GMC trucks . . . the complete selection of pickups, six-wheelers, tractors, dumps—in fact, a size and type for your every construction need.

You discover it in every truck built by GMC . . . in the extra-rugged *all-truck* quality that spells new reliability and long life . . . in the advances in engines, transmissions, axles and frames that mean new operating economies.

The biggest forward surge of its kind in trucking history, Operation "High Gear" is backed by the keenest brains and manufacturing know-how in the business. And, it's gaining speed with every passing day! GMC Truck & Coach—a General Motors Division.

Turn the page and see how Operation "High Gear" can pay off for you!

Light-duty GMC s are truck-built, too! A quick comparison will convince you there's no pickup for rugged construction work like GMC! Test the tailgate with one end unhooked. Two men can't make it sag. Check the front crossmember – same as on bigger GMC's. Note GMC's big-displacement *truck* engine.



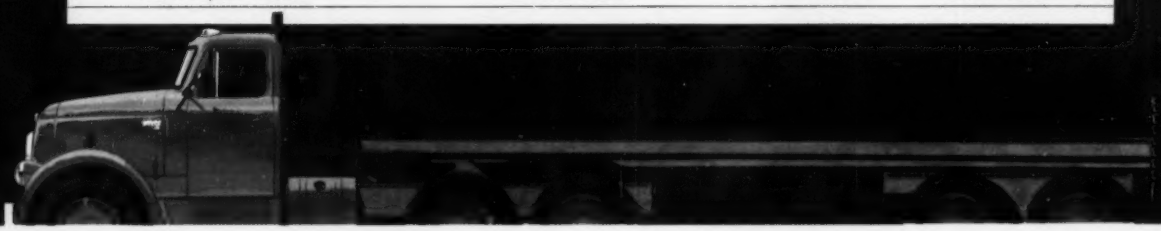
Rugged reinforced frames give GMC s backbone! GMC frames are built with *extra* brawn to withstand the shocks, twisting and stresses of heavy hauling over rough terrain. Where required, heat-treated frames and strategic reinforcing are used to give added strength without extra weight.

GMC OPERATION "HIGH GEAR"

brings you the world's most advanced trucks for on- and off-road construction . . . from truck-built ½-ton pickups to giant 90,000 GCW workhorses!

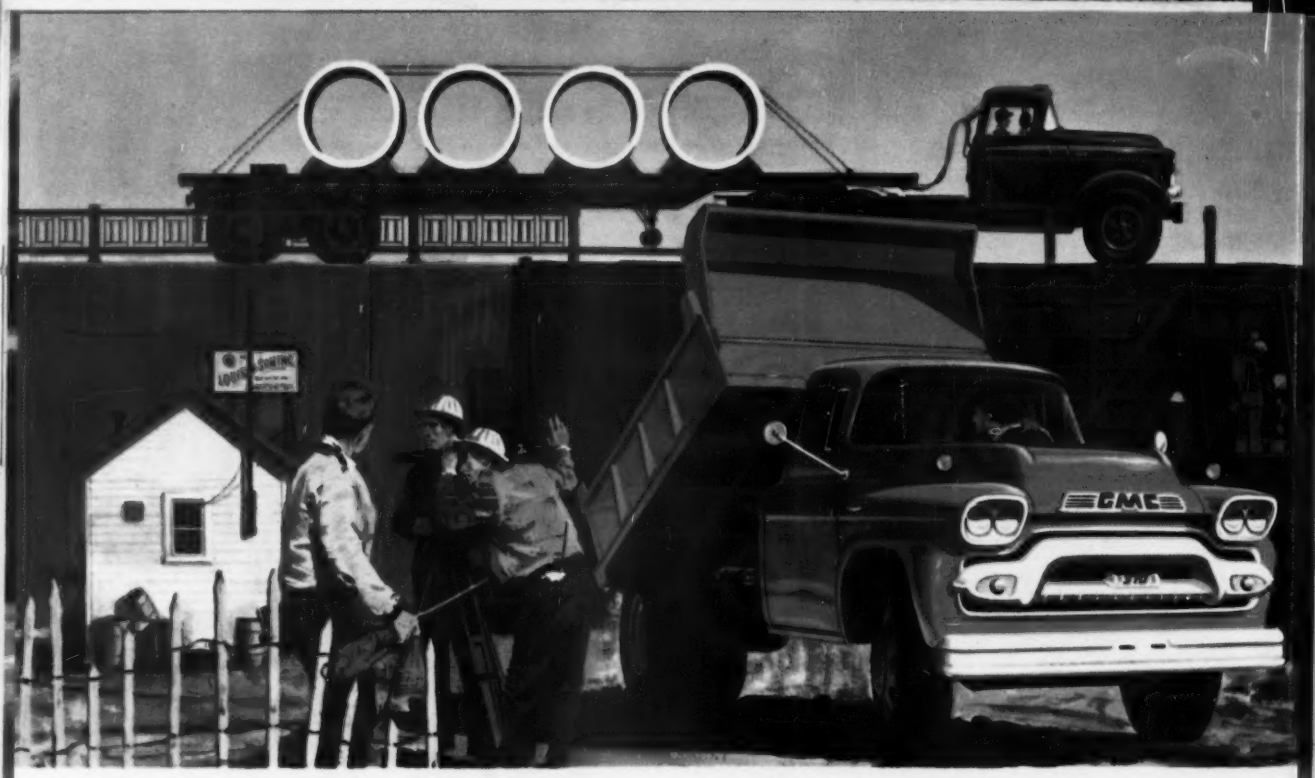
ECONOMICAL DIESEL POWER FOR ANY CONSTRUCTION JOB!

ENGINE MODEL	GMC 4-71	GMC 6-71SE*	
Gross HP at RPM	152 at 2300	189 at 1800	210 at 2100
Net HP at RPM	136 at 2300	175 at 1800	192 at 2100
Gross Torque at RPM	374 at 15-1600	577 at 1200	577 at 1200
Net Torque at RPM	344 at 13-1500	553 at 1200	553 at 1200

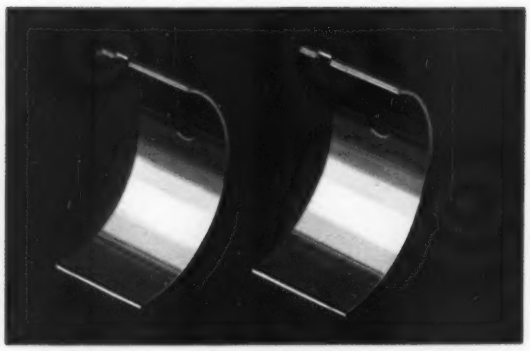


*Two power outputs shown reflect governor settings. Also available on request, full-power 6-71 developing 235 H.P.

GMC Two-Cycle Diesels combine power and economy. GMC 4- or 6-cylinder diesels are *two-cycle* engines. They pack more power per cubic inch and more power per pound of engine weight, at lower RPM's. *Four* exhaust valves per cylinder (not just one or two) plus GMC's precision fuel injectors give greater economy and efficiency. And, remember, in a GMC both engine and power train are *tailor-made for each other!*



Synchromesh transmissions standard on all construction trucks! No double-clutching, grinding gears or extra cost with synchromesh. GMC's smooth Hydra-Matic transmission and new Torqmatic automatic transmission with built-in hydraulic retarder for heavier trucks —available at extra cost.



Extra quality makes GMC engines last! M-400 bearings with 7 times the wear of conventional bearings . . . drilled oil passages in connecting rods . . . only two of more than 40 *extra* quality features standard on GMC's!

Biggest choice of chassis and components in the industry! You name it, GMC's got it! From the smallest pickup to the largest tractor, GMC can tailor-make the truck to fit your job. From its wide selection of cabs, engines, transmissions, frames, axles and wheels GMC can now offer you practically any truck combination you require — all thoroughly tested and proved for reliability and long life.

From ½-ton to 45-ton . . .
General Motors leads the way!

GMC
GENERAL MOTORS CORPORATION
TRUCKS

NOW! Get your whole "ball of wax" from your Minneapolis-Moline Industrial Dealer!

Here is the 335 Industrial Wheeler with matched backhoe and loader. The 445 and new 5-star Wheelers also have custom-designed backhoe and loader combinations.

1 CUBIC YARD LOADER on 2-Star Crawler with power shuttle challenges you to find its equal at low-cost dirt moving. 2-Star also comes with Moline backhoe, log forks, scarifier. 2-Star gives top performance with fuel-saving power.

2-STAR CRAWLER is power-proved for dozer capacity. Moline power shuttle boosts working range on all jobs. Gives unmatched performance with fuel-saving power, faster change of speeds, directions, advanced engineering improvements.

445 INDUSTRIAL WHEELER with its ¾ yard loader is the heavy-duty companion to the 335. Matched backhoes and choice of fuels. Hydraulic power steering. Ampli-Torc transmission *doubles* effective working power without clutching.

335 INDUSTRIAL WHEELER shown with matched backhoe and loader is the answer to your digging problems in tight quarters. Really easy to maneuver. Large capacity, works side-by-side, hour-for-hour with the BIG BOYS.

★ **Backhoe-Loader combination custom-designed for the new Moline Industrial Wheelers!**

★ **Entire unit sold and warranted by Minneapolis-Moline!**

★ **National dealer organization assures 1-stop 24-hour parts and service!**

From the *new* Minneapolis-Moline comes the *newest* advance in construction equipment: field-proved Moline Wheelers and Crawlers and *your choice* of specifically designed equipment matched to this industrial power. Entire unit is fully warranted by Minneapolis-Moline! *Here are advantages for you:* You can buy the particular piece of equipment you need now for your Moline Wheeler—then you can add other equipment perfectly matched any time your jobs require it! Your maintenance and service are simplified. And parts for the whole "ball of wax" are immediately available from your Moline dealer.

See your Minneapolis-Moline dealer about this newest advance in construction equipment. For name of the dealer nearest you, write today to Roger Hipwell, Sales Manager, Minneapolis-Moline Industrial Division, Hopkins, Minnesota.

"And, if you're a construction equipment dealer who'd like to make some *real* money, write today for full facts about this fast-growing line!"

Roger Hipwell

MINNEAPOLIS MOLINE

makes the news in modern industrial and construction equipment.

SIX LANES...NINE MILES

—AND EIGHTEEN MONTHS

The pressure is on for the builders and their Cities Service Lubricants

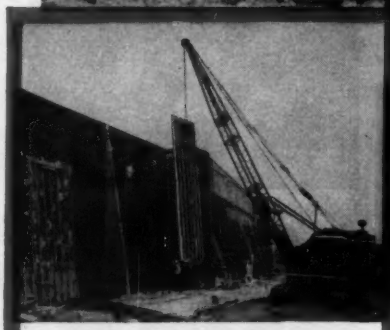
Working against the clock, two of the Midwest's most respected construction companies have joined hands in the building of a nine mile segment of the new Illinois Toll Road outside of Chicago.

The two firms, M. J. Boyle & Co., and Ryan Construction, are contractors for the entire job—excavations, grading, building and paving—and they have eighteen months to do the job. Before it is completed, they will have moved 5,000,000 yards of earth and constructed fourteen bridges in addition to the actual six lanes of road.

Clearly, the pressure is on! And sharing that pressure are Cities Service fuels, oils and greases. For when M. J. Boyle and Ryan Construction decided to team up, it was obvious they would need to standardize their fuels and lubricants—and the selection of Cities Service high quality products seemed the logical choice.

And logical it was! For despite an especially bad winter and a torrid summer, despite round-the-clock operation in heavy rain, snow, and mud, there's never been a lubrication failure of any kind.

At right, you can see some of the many Cities Service products used in this project—and the special advantages they offer. But only a Cities Service Lubrication Engineer can tell you how they might apply to *your* operation. Have a talk with him. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.



More than one bridge per mile, some of them major construction jobs, are included in the nine-mile segment being built by M. J. Boyle & Co. and Ryan Construction. To meet their 18-month schedule, the two firms have pressed 1200 men, countless machines and Cities Service lubricants into round-the-clock service.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

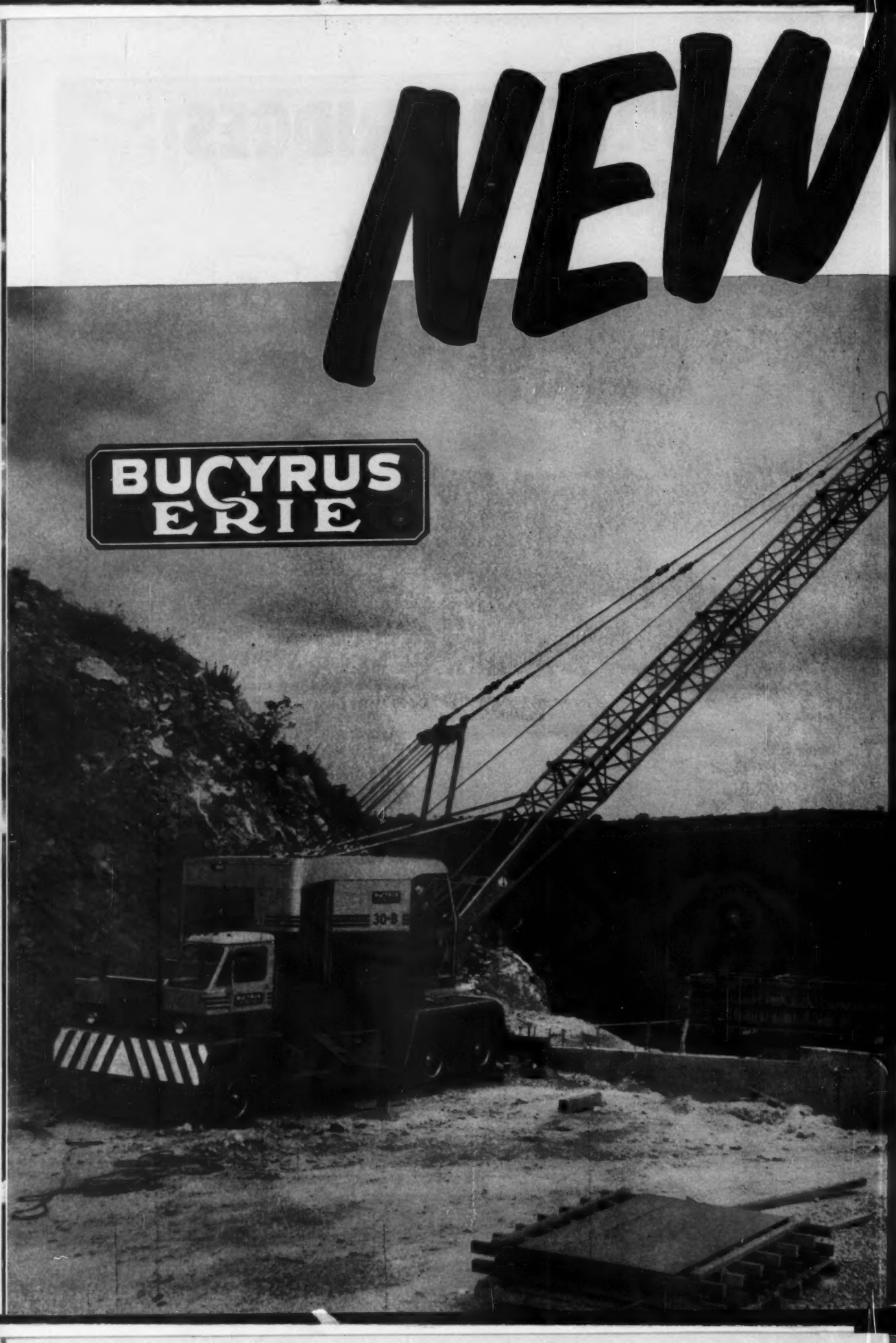
...FOURTEEN BRIDGES

TO FINISH THE JOB!

Equipment is fueled and serviced where it stands, by roving Cities Service truck. Field service assures maximum use of machinery and minimum downtime. Equipment stays on job where it must remain to keep tight schedule.

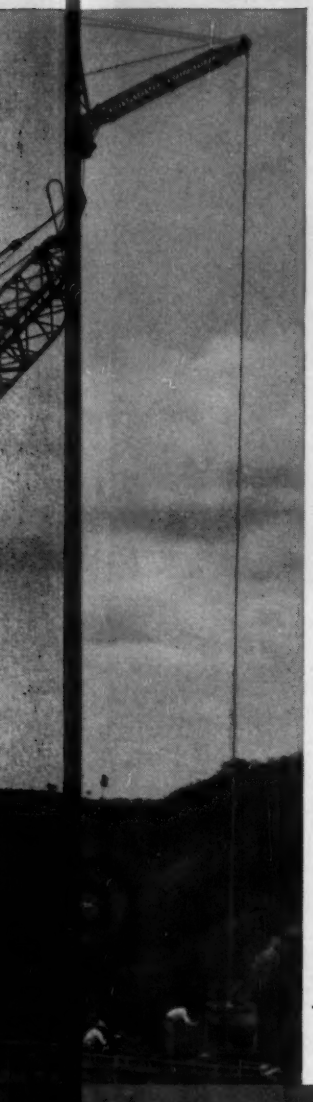
Tough Grind: Forging through heavy mud, these trucks illustrate the conditions prevailing during round-the-clock construction. Plenty of factors to cause lubrication failure—but there hasn't been a single one, thanks to Cities Service heavy duty oils and greases.

CITIES SERVICE PRODUCTS USED	WHY THEY USE THEM
C-500 Motor Oil	Excellent for diesels and gasolene engines in severest service. Extremely high detergency-dispersion.
Trojan H-2 Grease	New multi-purpose lubricant cuts inventory, reduces wear. Ideal for chassis, wheel bearings, water pump, etc. Better protection against mud and water.
Trojan Gear Oil	High-quality gear lubricant, blended from refined, high-viscosity index stocks. Contains oxidation inhibitor and anti-foam agent. Free-flowing, even at low temperatures.
DC-900 Oil	Ideal compressor lubricant. High viscosity index, superior anti-foam, anti-rust and anti-oxidation properties. Reduces deposit build-up.
Optimus 6 Steam Cylinder Oil	Unusually high-grade, filtered oil suited to pile drivers. One of many Cities Service steam cylinder oils.
Cities Service Diesel Fuel	Clean burning, for all diesel engines.
Milemaster Gasolene	A new regular gasolene of premium quality. Quick-starting, exceptionally clean burning.


NEW
BUCYRUS
ERIE
30-B

45-TON CAPACITY

30-B transit crane



Here's the big, new Bucyrus-Erie 30-B Transit Crane — designed to give you the *best* lifting crane in its class plus the tops in digging advantages as a 1-yd. hoe, shovel, dragline or clamshell. It's loaded with profit-boosting, cost-cutting improvements:

INCREASED LOAD CAPACITY AT GREATER RADIUS— With a 40-ft. boom, the 45-ton maximum allowable load can be lifted at radius of 15 feet.

NEW BOOM — The crane boom, fabricated of high-strength alloy steel, is designed with heavier chord angles and larger cross sections.

ANTI-FRICTION MOUNTING FOR POINT SHEAVES— Point sheaves are mounted on pre-lubricated, sealed, anti-friction bearings.

AIR-OPERATED BOOM HOIST AND ENGINE MASTER CLUTCH have been added to the 30-B's already convenient, quick-response, air-control system.

ADJUSTABLE CONE ROLLERS provide proper clearance between rollers and roller path. Rollers are also fitted with long-life, heavy-duty bushings to handle the greater roller loads.

BIG, RUGGED, 6 x 4 or 8 x 4 CARRIER, specially designed and built for fully convertible crane-excavator service, is available with gas or diesel engine.

You'll like these NEW features, too!

★ TWO-SPEED GEAR BOX (special)

★ SINGLE-PIECE COUNTERWEIGHT

★ PENDANT SUSPENSION WITH 12-PART TACKLE

★ BOOM ANGLE LIMIT CONTROL (extra)

★ LOWER OVER-ALL HEIGHT

send in coupon

. . . to get the complete story on how the new 30-B Transit Crane adds up to the soundest equipment investment you can make TODAY.

BUCYRUS ERIE®

Builds Better Equipment

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Gentlemen:
I'd like more information on the new 30-B Transit Crane.

NAME.....

COMPANY.....

ADDRESS.....

CITY..... STATE.....

US RUBBER CONVEYOR BELTS

Higher speeds, greater loads, longer life —with fewer belt plies!

The unusual thing about this self-propelled loader is the fact that it is equipped with a *4-ply* belt which is turning out a more satisfactory performance than the *5-ply* belt it replaced. This 4-ply belt is a U. S. Rubber Giant® (style EN), 54' long, and is doing such a good job that the operator is very well satisfied with its excellent performance.

The service is rugged—handling sand and gravel at speeds up to 700 fpm over small pulleys, under severe weather conditions, sun and ozone.

These belts—like all "U.S." belting—are engineered to always assure you of cost-saving performance and durability. Belts to service your requirement are available, right from stock, at your local "U. S." Distributor.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

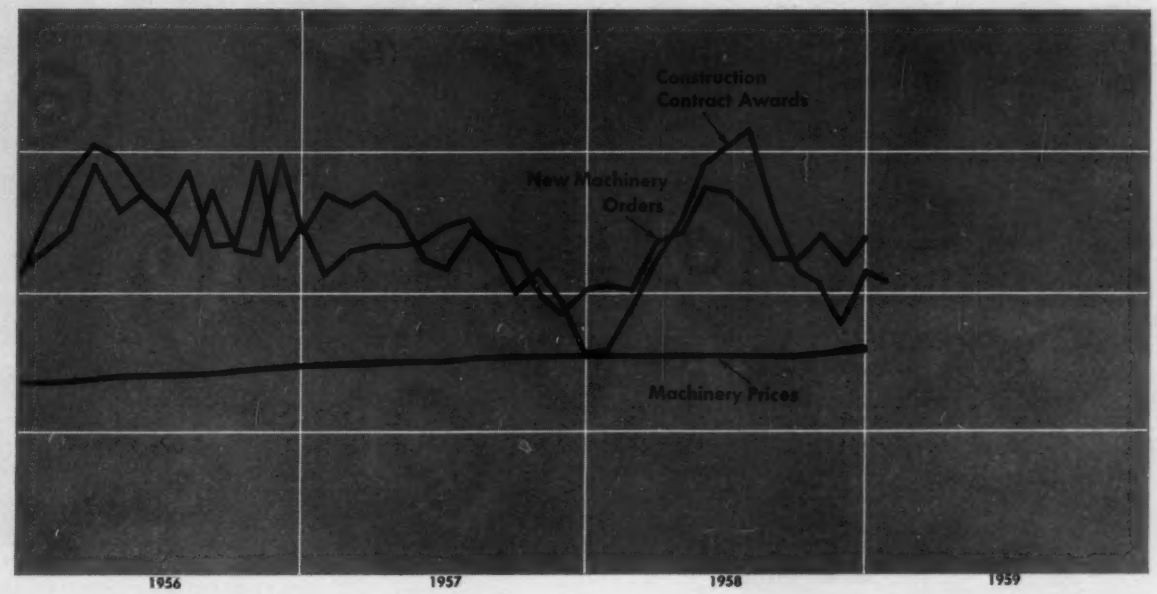
Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Trends in the Machinery Market



Price Index

	DEC 1958	MONTH AGO	YEAR AGO	% CHANGE 1957-1958
All Types of Equipment	169.6	168.0*	165.5	+2.6
Cranes; Draglines, Shovels	167.3	163.3*	163.0	+2.6
Shovel, ½ cu yd	156.2	156.2	153.7	+1.6
Shovel, ¾ cu yd	172.5	170.3	167.4	+3.0
Shovel, 1-1½ cu yd	183.3	180.7	174.3	+5.2
Shovel, 2-2½ cu yd	156.6	156.6	154.4	+1.4
Shovel, 3-3½ cu yd	162.7	162.7	162.7	0
Shovel, 6 cu yd	184.1	184.1	179.5	+2.6
Crane, truck mounted	168.1	168.1	164.2	+2.4
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	155.1	152.7	152.7	+1.6
Bucket, dragline	189.7	185.0	180.8	+4.9
Scrapers and Graders	159.2	157.5*	158.8	+0.3
Scraper, 4 Wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 Wheel, 12-15 cu yd	154.4	151.3	151.3	+2.0
Scraper, 2 Wheel, 14-18 cu yd (a)	122.7	122.7	122.7	0
Grader, heavy duty	164.2	161.2*	164.0	+0.1
Grader, light & medium	161.2	161.2	161.2	0
Tractors (non-farm, incl industrial)	186.4	184.3*	180.8	+3.1
Wheel-type, off highway (a)	129.2	129.2	127.7	+1.2
Crawler-type, 45-60 dhp	191.9	187.6	182.6	+5.1
60-80 dhp	196.4	190.8*	185.8	+5.7
80-120 dhp	191.3	188.7	186.7	+2.5
120 and up dhp	196.4	196.4	191.8	+2.4
Machinery, Tractor Mounted	167.8	165.6*	161.7	+3.8
Dozer, cable controlled	151.6	151.6	151.6	0
Dozer, hydraulic controlled	186.0	180.7	177.3	+5.2
Cable power control unit	150.0	147.9	147.9	+1.4
Loader, shovel type	161.0	161.0	153.9	+4.6
Specialized Machinery	152.3	150.6*	149.3	+1.9
Ditcher	156.6	154.1	154.1	+1.6
Roller, tandem	198.6	193.2	193.2	+2.8
Roller, 3 wheel	162.5	160.5*	161.6	+0.6
Ripper and rooter	143.3	143.3	143.3	0
Dewatering pump, 10 M gph	111.7	111.7	110.9	+0.7
Dewatering pump, 90 M gph	145.7	144.3	135.6	+7.4
Portable Air Compressors	159.5	159.5	159.1	+0.3
Contractor's Air Tools	170.3	164.5*	164.3	+3.7
Mixers, Pavers, Spreaders	150.9	150.0*	146.3	+3.1
Mixer, portable, 11 cu ft	161.6	160.1	157.3	+2.7
Mixer, portable, 16 cu ft	165.2	163.7	161.6	+2.3
Mixer, truck, 6 cu yd	127.9	127.3	124.1	+3.1
Mixer, paving, 34 cu ft	188.6	183.9	177.2	+6.4
Concrete finisher & spreader	183.5	181.5	173.0	+6.1
Bituminous distributor	122.3	122.3*	115.9	+5.5
Bituminous spreader	160.3	160.3	160.3	0
Bituminous paver	155.8	153.0	153.0	+1.8
Off-Highway Trucks, Wagons (b)	100.6	100.6	.....	.....
Contractors off-highway truck (b)	100.6	100.6	.....	.....
Trailer dump wagon (b)	101.4	101.4	.....	.....

• a January, 1955=100 • b January, 1958=100 * Revised
BLS Primary Market Price Indexes, U.S. Department of Labor, 1947-49=100

Prices May Rise Late This Year

List prices of construction equipment should hold steady for the first nine months or so of 1959. But manufacturers are likely to raise prices late in the year—as they did in each of the past four years.

Reasons for the 1959 increases will be basically the same as for the previous hikes: higher wages and steel costs. But contractor and distributor resistance may hold the price advance to around 2% to 3% on the average.

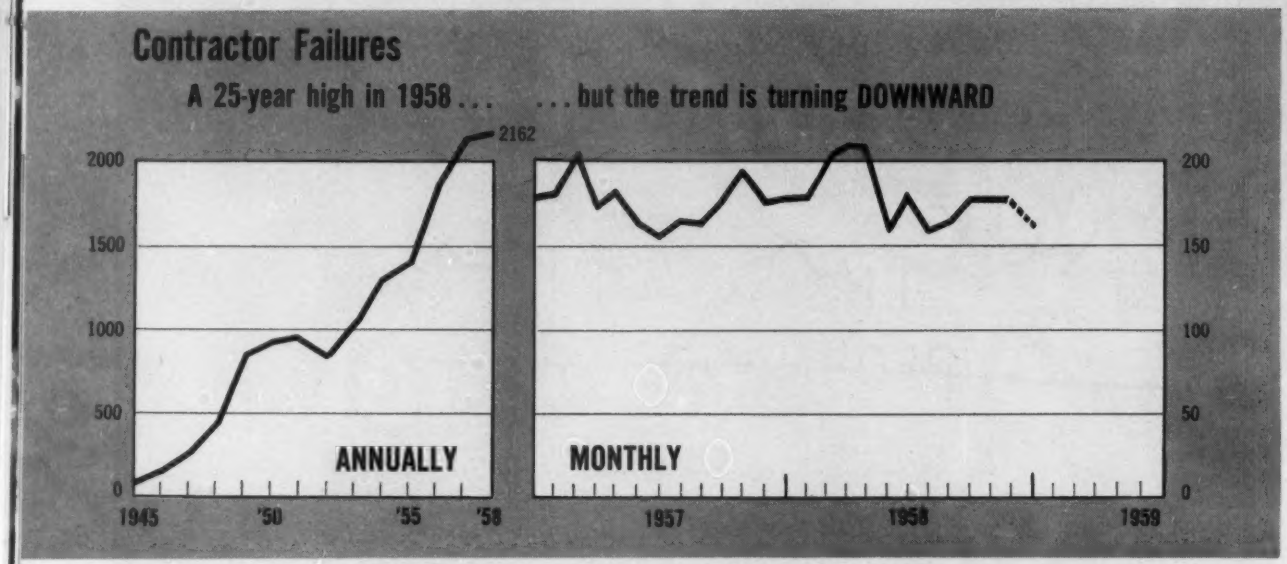
Contractors can expect fast deliveries on new rigs. And prolonged strikes such as hit Caterpillar, International-Harvester and Harnischfeger in 1958 are not likely to occur this year.

Record High

Price hikes pushed the Bureau of Labor Statistics Index of Manufacturers' prices to a record high of 169.6 on December 15. This was 1% higher than the previous high in November and 2.6% above the December, 1957, level. This index also shows that December, 1958, prices averaged 69.6% higher than during the three-year period, 1947 through 1949.

Contractors' equipment buying in 1958 hit the second highest dollar volume on record, according to the New Orders Index compiled by the McGraw-Hill Economics Department. The index averaged 237 for the year, based on 1949=100. This was 3.4% more than the 1957 order volume and second only to the record in 1956 when the orders index hit 252.

The equipment orders index for 1958 followed closely the heavy construction contract index, which averaged 235 for the year, a 7% rise over 1957.



Fewer Contractors Go Bankrupt

THERE'S a silver lining in the otherwise ominous record of contractor failures in 1958. Although the total number of firms going bankrupt during 1958 increased to a record high, nearly all of the rise came during the first seven months. The record of the last five months — and the early weeks of 1959 — is much more encouraging.

During the five months from August through December, contractor failures averaged 170 per month, according to Dun & Bradstreet figures. This was about 10% less than the very high average for the January-July period. Moreover, it was 3% under the failures rate recorded in the last five months of 1957.

This trend to greater strength gained momentum early in 1959. Failures reported during the first three weeks of January indicate that the month's total might fall as low as 135. This would be the lowest number of contractor bankruptcies in any month since May, 1956, the peak of the 1955-56 boom.

The drop in the failures rate seems to point out that the construction industry today is healthier than at any time in the last two years. This is partly a result of the turnaround in the volume of new business. Following the prolonged recession in contract awards during 1957, new business rebounded sharply last year. 1958 wound up with the second highest dollar total on record: $19.2 billion. The 1958 upswing in new contracts is the beginning of a new expansion of business. The *Construction Methods* forecast indicates a continuing rise in business volume during 1959 and 1960 (CM&E, Jan., p. 30).

continued on page 54

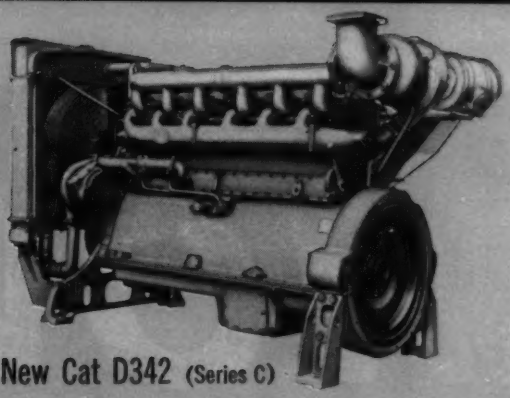
Contractor Failures by Type, Size, Region—1957 & 1958

Reported by Dun and Bradstreet, Inc.

	Number			Liabilities (000)		
	1958	1957	% Chg.	1958	1957	% Chg.
U.S. TOTAL	**2,162**	**2,105**	**+ 3**	**$115,115**	**$110,312**	**+ 4**
By Type of Contractor						
General building contractor	872	805	+ 8	62,758	64,425	- 3
Building subcontractor	1,169	1,175	- 1	41,006	36,466	+12
Other contractors	121	125	- 3	11,351	9,421	+20
By Size of Liability						
Under $25,000	1,129	1,132	-0.3	12,374	12,791	- 3
$25,000 - $99,999	774	739	+ 5	36,943	34,700	+ 6
$100,000 and over	259	234	+ 11	65,798	62,821	+ 5
By Region*						
New England	140	119	+ 18	6,795	3,615	+88
Middle Atlantic	556	445	+ 25	29,847	33,781	-12
South	326	314	+ 4	17,908	13,861	+29
Middle West	433	419	+ 3	27,037	20,900	+29
West of Mississippi	222	285	- 22	8,151	14,527	-44
Far West	485	523	- 7	25,377	23,628	+ 7

* Original data by Federal Reserve Districts

engine power
BY CATERPILLAR



The New Cat D342 (Series C)

BRAND-NEW ENGINE WITH A 27-YEAR PERFORMANCE RECORD!

Can an engine with 27 years of hard and profitable contract work behind it be called new? Not with any degree of accuracy. This is especially true of the D342 (Series C). Yet, it is an engine made up of hundreds of newly engineered parts, compounded to provide an increased work range.

But there's far more to offering this new engine to meet the realistic needs of contractors than just knitting metals into horsepower at the drive shaft.

In 1931 Caterpillar introduced the first diesel engine in a track-type tractor. You've probably heard this before, but did you know that the four-cycle design employed in that engine is still found in every Cat Diesel? It was the best then; it's the best now.

Our original fuel system principle was so simple, easily maintained and economical that it has only been necessary to improve the parts.

Diesel engines have always required sizeable capital investments. This has led to highly competitive pricing. Cat Engine quality standards are never lowered to gain an initial price advantage. Cat owners realize increased performance and profit that far exceed any difference in initial price that might exist between Cat Engines and competitive diesels.

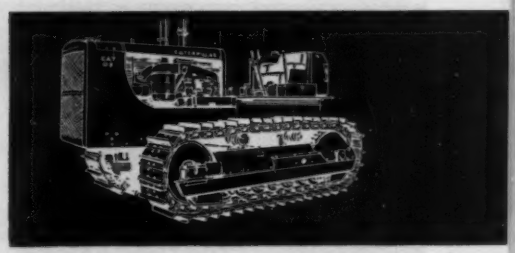
The former Cat D342 Engine has been redesigned, reshaped and improved in *all* of its many parts. These improvements help the contractor produce more with excavators, crushers, batch plants and other machines on the job. And this design progress will continue.

If this sounds like the kind of diesel engine that could fill a need on your job, then specify the D342 (Series C) for your next appropriate construction machine, or see your Caterpillar Dealer. Also write us for the more detailed D342 (Series C) brochure, *Form No. 20151-1.*

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

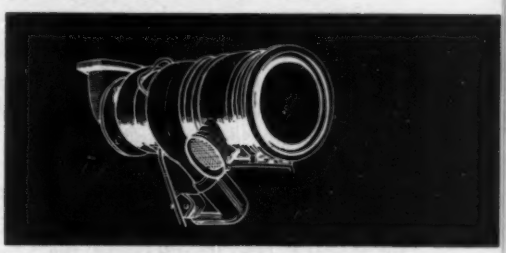
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Taking the gamble out of buying a new engine.



PERFORMANCE. D8 Tractors have long been made the standard for tractors by contractors. The predecessor configurations of the D342 have contributed mightily to this acceptance.

SERVICE. The new D342 (Series C) is backed with 24-hour availability of parts and service. The outstanding unified Cat Dealer organization gives a big plus-benefit to buyers of every Cat Engine.

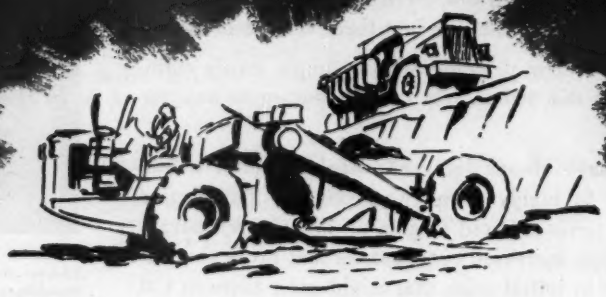


IMPROVEMENTS. Important advances include: (1) increased HP in all D342 (Series C) configurations; (2) turbocharging produces greater power capacity and fuel economy; (3) a new efficient air cleaner now has 99 plus per cent dust removal.

OTHER QUALITY FEATURES include valve rotators to provide prolonged and uniform valve seating, cast-in iron top ring band for longer piston and ring life, and crankshafts induction hardened and shot peened for greatest toughness and strength.

NOW the R-1160 ROADRANGER TRANSMISSION

designed specifically for earthmoving and construction equipment



The Fuller 9-speed semi-automatic R-1160 ROADRANGER Transmission is engineered for tractors and trucks equipped with engines of up to 1160 cubic inches piston displacement. An outgrowth of Fuller's highly-successful Model R-1150 ROADRANGER, the R-1160 is designed to handle up to 800 lbs./ft. of engine torque.

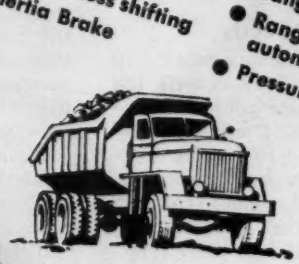
Featuring higher capacity and long wear life, the newest ROADRANGER is built to give fast work cycles, low fuel consumption, longer engine life, less down time, reduced operator fatigue . . . and greater profits.

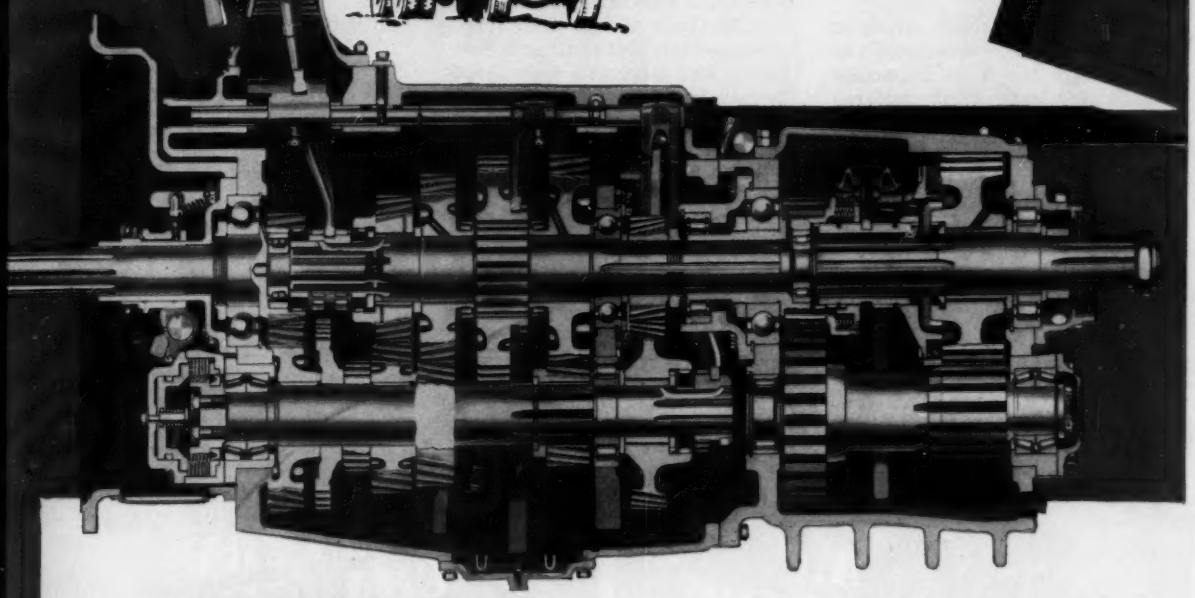
Standard on the R-1160 ROADRANGER is Fuller's Air Powered Countershaft Inertia Brake, which provides quick up-shifts without double-clutching simply by pressing a button. Also standard is the Fuller Pressurized Filtration System, whereby gear oil is circulated by a pump through a filter which removes metallic particles and road grit from the lubricant.

To increase the capacity of the R-1150, Fuller widened the faces and coarsened the pitch of auxiliary drive and reduction gears. Accompanying this change is an increase in synchronizer capacity, and a new auxiliary case of greater section and length accommodates the larger gears. All front section yokes except the third and fourth are clamped to the bar.

THE R-1160 PROVIDES THESE ADVANTAGES

- No gear splitting—9 selective gear ratios are evenly and progressively spaced
- Easier, quicker shifts—38% steps between ratios
- Less driver fatigue—⅓ less shifting
- Countershaft Inertia Brake
- One shift lever controls all 9 forward and 2 reverse speeds
- Engines work in peak horsepower range with greater fuel economy
- Range shifts pre-selected—automatic and synchronized
- Pressurized filtration system





VITAL STATISTICS

GEAR	RATIOS	% STEP	
Ninth	.75	33	HIGH RANGE
Eighth	1.00	39	
Seventh	1.39	40	
Sixth	1.94	34	
Fifth	2.59		
RANGE SHIFT		34	
Fourth	3.48	39	LOW RANGE
Third	4.84	40	
Second	6.76	34	
First	9.02		
Reverse	3.31	High Range	
Reverse	11.53	Low Range	

WEIGHT: 1133 lbs. LENGTH: 44 21/32" OIL CAPACITY: 35 pts.; with filter, 38 pts.
CLUTCH HOUSING SIZE: SAE No. 1 APPROXIMATE ENGINE SIZE, CU. IN.: 1160

FULLER

TRANSMISSION DIVISION
MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.
Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

Contract awards started off this year with a rate in January that was well above the low volume a year earlier. Volume last month was close to the high rates of January, 1955, and 1957, though still below the January, 1956, peak.

More new business available helps to ease the pinch of competition a bit. Contractors aren't under as much pressure to bid jobs close just to keep working. But more business is not THE CURE for failures. Good management is the key. And that means, for one thing, realistic bidding.

Dun & Bradstreet's analysis lists "competitive weakness" as increasingly the most important reason for contractor failures. The unhappy ability of some inexperienced contractors to bid themselves into bankruptcy is certainly an important cause of failures.

How can this happen? A recent example is the contract boom of 1955-56 which brought not only a big increase in available construction, but also a sharp rise in costs of materials, labor, and equipment. Contractors who did not allow for the rapid increase in costs over the contract period, found their bills inflated, their profit lost.

Contractor Capacity

Competition for new work will remain keen in 1959 despite the brisk flow of new projects coming up for bids. Contractor capacity is ample to handle even more work than probably will be available. This year's contract volume is forecast by *Construction Methods* at less than 1956's all-time high. But contracting capacity has increased since 1956, largely because of more productive equipment and better construction methods.

Costs are trending up for the tenth consecutive year. There is less of a rise in prospect for some materials prices, such as cement (which is holding steady in most areas of the country this year), steel, and lumber. But wage increases will be hefty this year. And equipment prices moved up within the last few months. That means generally higher equipment prices this year and next as well as increased rental rates.

Competition for new work and the continuing cost rise will hold the pressure on contractors this year. But the experience of the recent boom and the tough sledding of late 1956 and 1957 should go a long way to keep the trend in failures headed down—or at least steady.

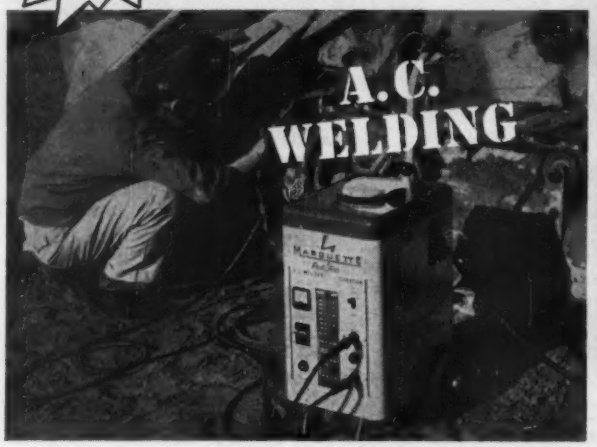
This year should be more profitable than 1958 for the more than 480,000 contractors in the U. S.

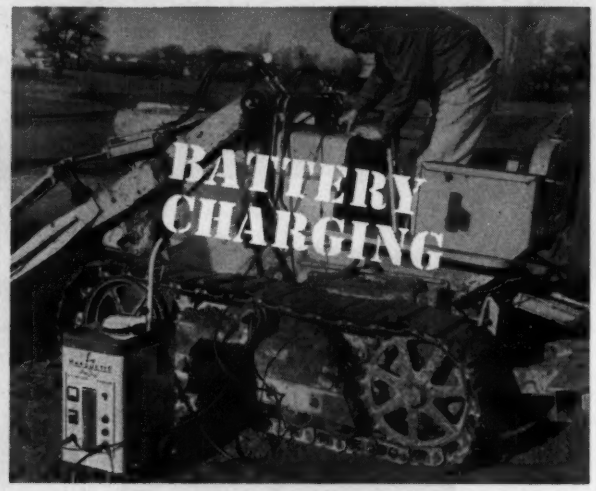
SOME BIG CONTRACT AWARDS OF THE MONTH

George A. Fuller Co., 597 Madison Ave., Turner Construction Co., 150 E. 42nd St., Walsh Construc-

continued on page 58

NOW You can do both





. . . with One Unit!

The MARQUETTE *Redi-Arc*

Here it is! The Marquette *Redi-Arc* unit, two high quality machines in one . . . an ideal welder for light to medium work and a fast charger for all 6 or 12 volt batteries.

WELDING: Easy-starting arc, easily maintained throughout wide 20 to 180 Ampere range. Takes electrodes of all types 1/16" thru 5/16" . . . handles A.C. metallic arc welding and cutting plus arc torch brazing, soldering and heating jobs.

CHARGING: Flip a switch to use as a charger for all 6 and 12 volt batteries. Easily read, color-coded charging rate indicator shows correct current setting. Delivers up to 50 Amperes at 6 volts, 25 Amperes at 12 volts.

Marquette *Redi-Arc* Welder-Chargers give superb performance, service-free operation. See one soon . . . discover how you profit more with this simple, versatile machine.

MARQUETTE

MARQUETTE MANUFACTURING CO., INC.

DEPT. 9-210, 307 E. HENNEPIN AVE. • MINNEAPOLIS 14, MINN.

ENGINEER'S FIELD REPORT

PRODUCT RPM DELO OIL

EDWARD KEEBLE CONSTRUCTION CO.
FIRM San Jose, California

RPM DELO Oil keeps tractor on the job 15 years

Still Working after 15 years using RPM DELO Oil in this D-8 Caterpillar operated by Edward Keeble Construction Co. Block, crankshaft, and most other parts of original engine are still in use. Another of firm's D-8's using RPM DELO Oil ran 12,000 hours without engine repairs. When torn down, maximum crankshaft wear was .004".

Crawler Crane, like firm's other heavy-duty equipment, uses RPM DELO Oil. Keeble operates 120 pieces of construction equipment—has as many as 30 jobs going at once.

GMC V-8 10-Yard Dump Truck (left), one of a new fleet of 12, also uses RPM DELO Oil. Mr. Keeble (right), says, "For the past 15 years we have kept our heavy-duty engines in top operating condition with RPM DELO Oil. In several instances engines have actually outlasted equipment."

Why RPM DELO Oils reduce wear—prolong engine life

- Oil stays on engine parts - hot or cold, running or idle
- Anti-oxidant resists lacquer formation
- Detergent keeps parts clean
- Special compounds prevent corrosion of bearing metals
- Inhibitor resists crankcase foaming

For More Information or field help with any fuel or lubrication problem, contact representative of any company listed, or write direct.

LUBRICATING OILS RPM DELO

TRADEMARK "RPM DELO" AND DESIGN REG. U. S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA COMPANY, Denver 1, Colorado

New Model 773 for general utility range (5'6" deep and 24" wide), and new Model 772 with reduced over-all width for tight quarters. Write for new bulletin.

Two new low-cost Barber-Greene ditchers

with advanced features not available on even the most expensive ditchers

All these advantages — offered only by Barber-Greene — mean more ditch per day

- **New Dual-Range Hydra-Crowd Transmission** provides infinitely variable crowding speeds independent of wheel and conveyor drives. No stopping to change speeds . . . no gear shifting. Instant selection of maximum crowding speeds for every digging condition.
- **New Digging Wheel Drive** through telescoping drive shaft, floating differential and split No. 1 shaft cuts maintenance and wear on drive unit . . . assures uniform gear contact on both sides of the wheel.
- **New Power Flow Design** makes all units readily accessible for easy maintenance and gives the entire machine better balance.
- **Optional, All-Hydraulic Spoil Conveyor** eliminates all chains and sprockets . . . provides instant selection of infinitely variable speeds to 630 f.p.m., independent of wheel speed—instant reverse.
- **New Hydraulic Controls** give greatest accuracy in digging to line and grade . . . offer a new high in operating ease. All controls grouped within easy reach for less fatigue and greater operator comfort.
- **New Flexible Drawbar** between chassis and boom reduces transfer of twist and tilt from wheel to chassis when digging around curves or over uneven ground. This design reduces chain length and eliminates idler sprockets.
- **New Crawlers** are easily adjusted in one-tenth the time of ordinary crawlers. Constant tension is provided by predetermined spring loading . . . crawlers quickly loosened or tightened without changing spring tension.
- **Other Features Include:** automatic overload protection, new hydraulic brakes, new hydraulic wheel hoist.

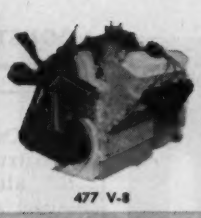
58-42-D

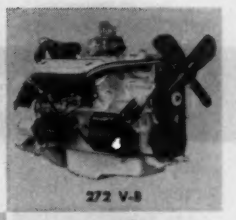
Write for information on the ditcher line of advanced design.

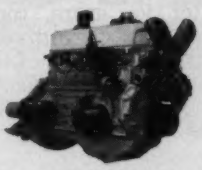
Barber-Greene BG

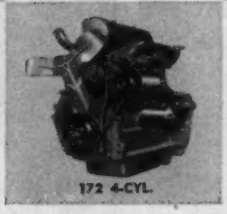
AURORA, ILLINOIS, U. S. A.

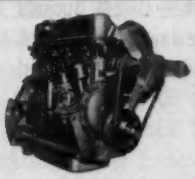
CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

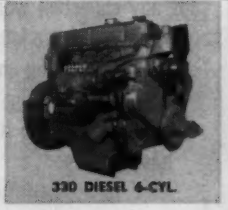


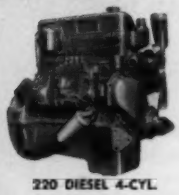




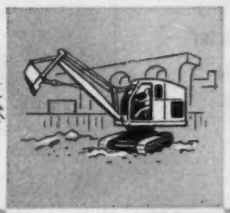


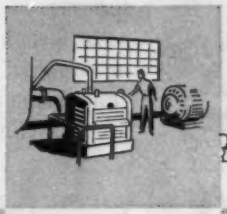


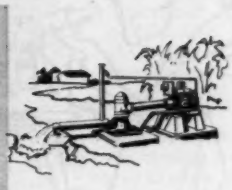


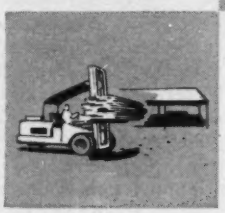


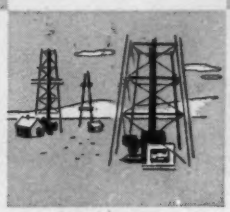
NOW...TEN FORD INDUSTRIAL ENGINES TO MEET YOUR POWER NEEDS!











Whatever your application, consider the many advantages you get with a Ford Industrial Engine.

Completely modern throughout, all Ford engines have Short Stroke design for increased operating economy . . . overhead-valve construction for quick, easy servicing . . . and provide more horsepower per pound of engine weight than ever before possible. To cut costs on *big* jobs, Ford offers 3 new Super Heavy Duty V-8's with totally new lubrication-, cooling-, and fuel-systems.

Ford Industrial Engines range from 134 to 534 cubic inches . . . including two Diesels. All are available as engine assemblies or power units, and can be fitted with Ford-approved attachments such as SAE housings, torque converters, transmissions and other equipment for special operating needs.

What's more, Ford users enjoy a minimum of downtime because there's always a Ford Dealer nearby with a complete stock of the more commonly purchased replacement parts. Yours at low Ford prices.

Get the *right* power for your application. Check Ford's full line of 4-, 6-, and V-8-cylinder engines soon.

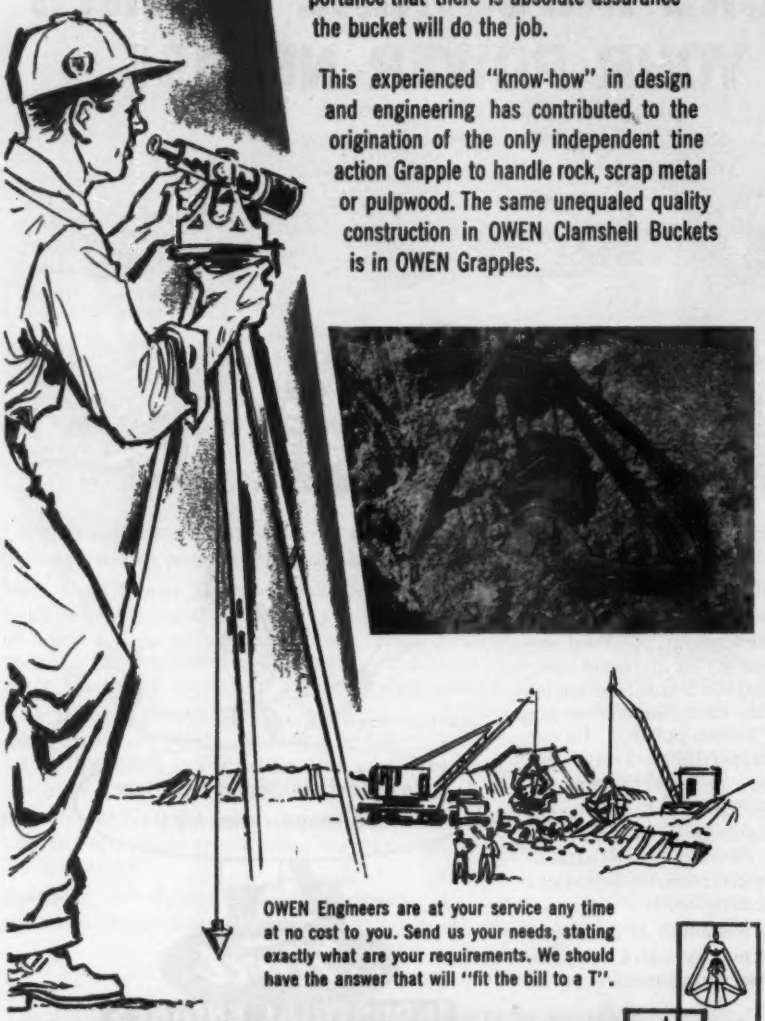
INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY
P. O. Box 598, Dearborn, Michigan

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

You can't set your sights too high

For digging . . . for handling material . . . for any clamshell work—OWEN Buckets perform giant size jobs day in and day out. OWEN'S designing and engineering experience, gained through 50 years of manufacturing Clamshell Buckets exclusively, has developed a product that is guaranteed to out-perform any other make. Remember—the bucket is the working end of the boom and it is of the utmost importance that there is absolute assurance the bucket will do the job.

This experienced "know-how" in design and engineering has contributed to the origination of the only independent tine action Grapple to handle rock, scrap metal or pulpwood. The same unequaled quality construction in OWEN Clamshell Buckets is in OWEN Grapples.



OWEN Engineers are at your service any time at no cost to you. Send us your needs, stating exactly what are your requirements. We should have the answer that will "fit the bill to a T".

The OWEN BUCKET Co.

BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

CONSTRUCTION BUSINESS . . .

continued from page 54

tion Co., 711 3rd Ave., Slattery Construction Co., Inc., 46-36 54th Rd., all of New York City. Construct six buildings to comprise new center for opera, concert, dance, and repertory drama at Lincoln Square N.Y.C. Lincoln Center for Performing Arts, c/o Harrison & Abramovitz, 360 5th Ave., New York. $60,000,000.

Mason & Hanger—Silas Mason Co., Inc., 500 5th Ave., New York, N.Y. Construct underground launching facility for Titan ICBM at Lowry Field. Dept of the Air Force, Lowry Air Force Base, Denver, Colo. $50,000,000.

Bechtel Corp., 220 Bush St., San Francisco, Calif. Design and construct nuclear power plant at unselected site near Philadelphia, Pa. High Temperature Reactor Development Associates, c/o Philadelphia Electric Co., 1000 Chestnut St., Philadelphia, Pa. $24,500,000.

Gust Newberg Construction Co., 2040 N. Ashland Ave., Chicago, Ill. Construct a 1,000-bed veterans hospital at Brecksville, Ohio. Veterans Administration, Munitions Bldg., Wash., D.C. $21,737,000.

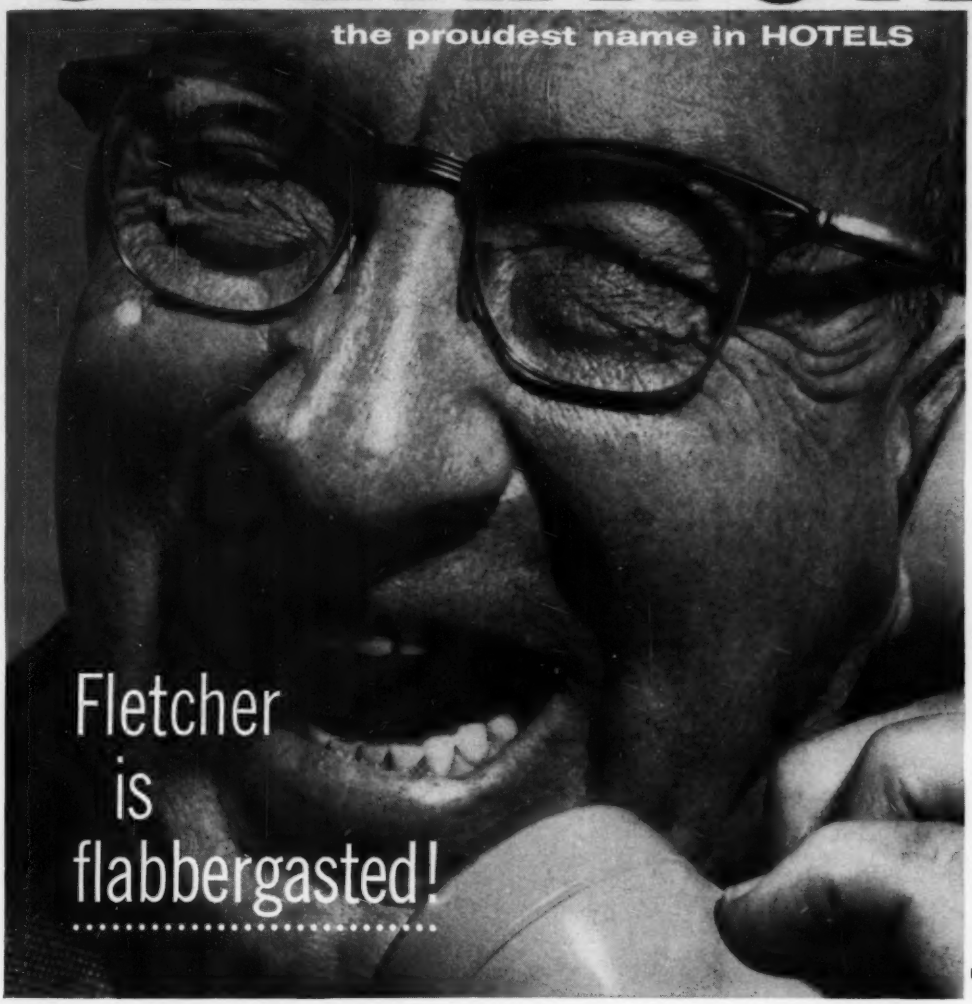
Manson Construction & Engineering Co., 5209 E. Marginal Way, Seattle, Wash., J. A. Jones Construction Co., 209 W. 4th St., Charlotte, N.C., Perini Corp., 73 Monwait Ave., Farmington, Mass., and Osberg Construction Co., 1128 N. 132 St., Seattle, Wash. A joint venture to construct a drydock at Puget Sound Naval Shipyards, Bremerton, Wash. Public Works Officer, 13th Naval Dist., U.S. Naval Station, Seattle, Wash., $21,645,000.

Tecon Corp., 202 Davis Bldg., Dallas, Tex. Construct locks for Barkley Lock and Dam Project, 3 mi above mouth of Cumberland River, in Lyons and Livingston Counties, Kentucky. Corps of Engineers, 306 Federal Office Bldg., Nashville, Tenn. $16,379,035.

The Rust Engineering Co., 930 Fort Duquesne Blvd., Pittsburgh, Pa. Design and construct a paper pulp mill at Rumford, Me. Oxford Paper Co., Rumford, Me. $15,000,000.

SHERATON

the proudest name in HOTELS



Which of these 39 cities is your next stop?

EAST
NEW YORK
BOSTON
WASHINGTON
PITTSBURGH
BALTIMORE
PHILADELPHIA
PROVIDENCE
ATLANTIC CITY
SPRINGFIELD, Mass.
ALBANY
ROCHESTER
BUFFALO
SYRACUSE
BINGHAMTON, N.Y.
(opens early 1959)

MIDWEST
CHICAGO
DETROIT
CLEVELAND
CINCINNATI
ST. LOUIS
OMAHA
AKRON
INDIANAPOLIS
FRENCH LICK, Ind.
RAPID CITY, S. D.
SIOUX CITY, Iowa
SIOUX FALLS, S. D.
CEDAR RAPIDS, Iowa

SOUTH
LOUISVILLE
DALLAS
(opens early 1959)
AUSTIN
MOBILE

WEST COAST
SAN FRANCISCO
LOS ANGELES
PASADENA
PORTLAND, Oregon
(opens fall 1959)

CANADA
MONTREAL
TORONTO
NIAGARA FALLS, Ont.
HAMILTON, Ont.

. . . Sheraton's ***RESERVATRON*** got him his hotel reservation in just 4 seconds!

A call to the nearest Sheraton Hotel sets in motion the world's fastest hotel reservation service. ***RESERVATRON,*** new electronic marvel, reserves and confirms your room in any Sheraton Hotel coast to coast in split seconds! For hotel reservations for your next trip, just phone Sheraton. Let ***RESERVATRON*** take it from there.

FREE BOOKLET to help you plan trips, sales and business meetings, conventions. 96 pages, describing Sheraton facilities in 39 major cities. **MEMBERSHIP APPLICATION** for the Sheraton Hotel Division of the DINERS' CLUB. This card is an invaluable convenience for the traveler — honored for all Sheraton Hotel services.

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Sheraton Hotels, Dept. 15, 470 Atlantic Ave., Boston 10, Mass.
Please send me, without obligation: ☐ Sheraton facilities booklet
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Name.....
Address.....
City.....*Zone*.....*State*.....

"Penn-Can Highway" contractor slashes downtime on 300 piece

GULF MAKES THINGS R

S. J. Groves & Sons Company of Syracuse, New York, can tell you how Gulf makes things run better.

Twenty-eight scrapers, 48 pushers and dozers, 16 shovels, 18 mobile cranes, 42 rollers, 53 trucks—all told more than 300 of their big units run on Gulf fuels and lubricants. And they run with an unusual record of day-to-day availability—with downtime kept at a minimum on an important Federal Highway project.

S. J. Groves is doing all the grade separations, approaches and landscaping for 16 miles of highway and 15 miles of access roads on the "Penn-Can Highway," part of the Federal Highway System in upper New York State. Photo above shows work on the Oswego Boulevard section in Syracuse where 250 buildings were removed to form a connecting link to the highway.

Keeping all the equipment running is the responsibility of Wilson Fosdick, Maintenance Superintendent, N.Y. District, and Clarence Van Orden, Shop Foreman. "Good fuel and oil keep engines clean," says Mr. Van Orden, "and that eliminates 75% of engine maintenance problems and emergency calls to get stalled equipment back on the job."

300 pieces of heavy equipment . . .

S RUN BETTER!

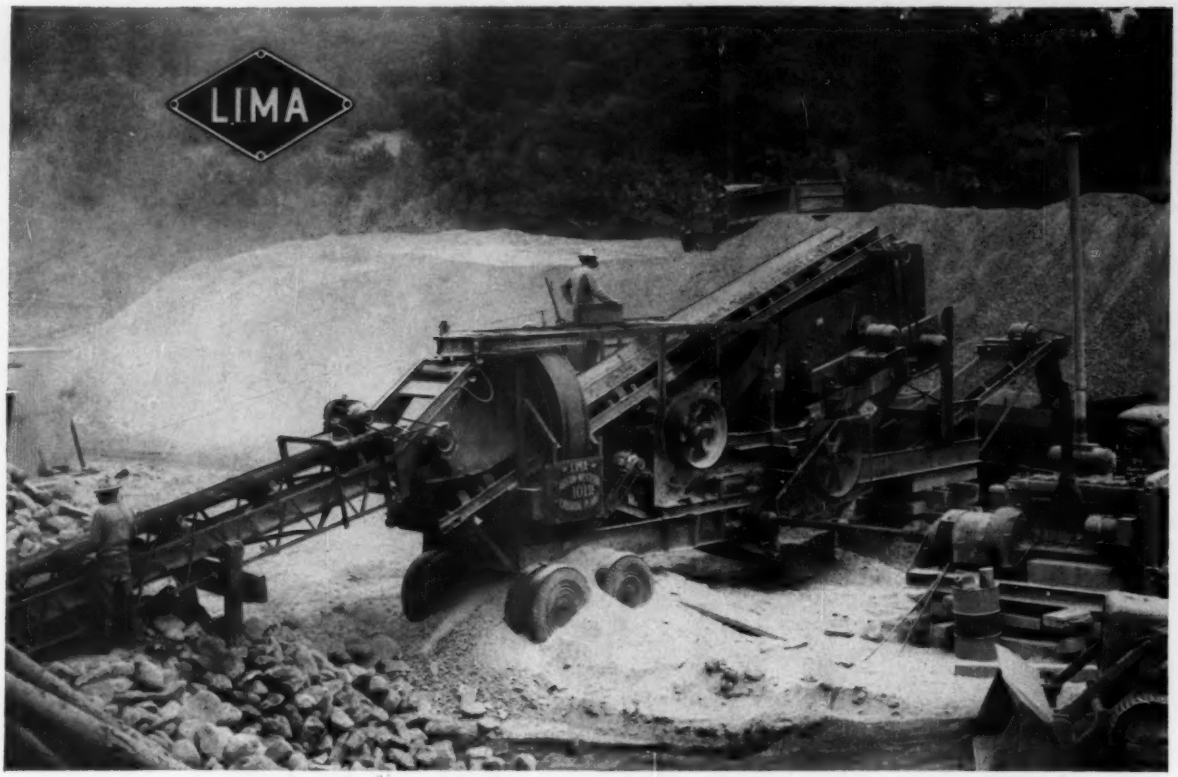
Gulf can make things run better for you, too. Call your nearest Gulf office, or send for "Contractors' Guide" — the maintenance "bible" for heavy equipment.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Building, Pittsburgh 30, Pa.

Jack Conway, left, Grading Superintendent of S. J. Groves, discusses equipment performance with Gulf representative, H. A. Martineau.

EP2306



Lima Austin-Western 101-SE portable crushing and screening plant travels narrow mountain trails to reach such remote end-use site as this, where it produces high tonnage of low cost construction aggregate.

Portable Lima Austin-Western 101-SE crushes, screens 160 tons hourly for Colorado contractor

"There are many reasons why we like our Lima Austin-Western 101-SE portable crushing plant," says Dean McClellan, of Oliver & McClellan Construction, Cortez, Colo. "Features that have paid off especially well for us are portability, push button control and high production at low cost."

Portability a must

"In this part of the country, and in our operation particularly, portability is a must. We move our 101-SE in the mountains over nothing but Jeep trails. Yet we never worry about its upsetting.

"One-man push button electric operation is great, too. The operator sits where he can see the whole plant—he can control any operation all by himself.

"We are more than satisfied with the high production of our 101-SE. Colorado rock has a reputation for being mighty hard to crush. But with our crusher, it breaks up easily. On a recent job our 101-SE produced 1½ in. minus base material, in 70% crush, at an average rate of 160 tons per hour! In my book, that's good production," Mr. McClellan said.

Diesel, electric power

The 101-SE is a completely portable, rubber mounted, self-contained crushing and screening plant. Diesel engine drives crusher and generator, which powers all other operations. Electric drives eliminate troublesome clutches, chains, sprockets and gearboxes . . . simplify maintenance, help reduce cost per ton. Portable plant capacities range from 25 to over 200 tons per hour.

Keep pace with your cost and progress estimates . . . keep haul cost and time low. There is a high-speed, profit-making Lima Austin-Western plant, portable or stationary, exactly right for your needs. Send for all the facts and the name and address of your nearest distributor.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

5917

BALDWIN BLH LIMA-HAMILTON

I'm Convinced M-F has the Right Approach to POWERFUL, VERSATILE EQUIPMENT

Speed, versatility, stamina, efficiency, and economy is the approach Massey-Ferguson takes to industrial equipment.

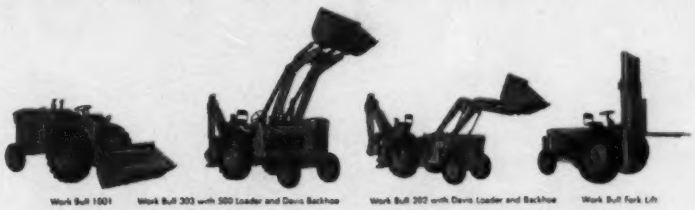
That's what you find in this mighty, customer-proven Work Bull 303 rig. It will keep your job moving and send your profits soaring.

It is faster cycling than more expensive, single-purpose machines because it backs up or goes forward at the touch of a pedal – no shifting or clutching. Same pedal controls acceleration. Full-time power steering, individual turning brakes, 54.9-h. p. engine with special torque converter are other features of this amazing tractor.

The 7/8-cubic-yard loader obtains maximum efficiency with direct-line thrust, but without sacrifice to dump height because of telescoping lift arms.

The famous Davis Backhoe makes it an all-around rig. Numerous other attachments let one man handle scores of different jobs with one machine.

You will like other cost-saving Massey-Ferguson Industrial Equipment, too. Your M-F Industrial Dealer can help you select the outfit that's right for you. Write for free literature and his name and address.



Work Bull 1001 Work Bull 303 with 500 Loader and Davis Backhoe Work Bull 202 with Davis Loader and Backhoe Work Bull Fork Lift

MASSEY-FERGUSON INDUSTRIAL DIVISION

1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

NEW CHEVROLET 4-
YOU TO HAUL WHERE

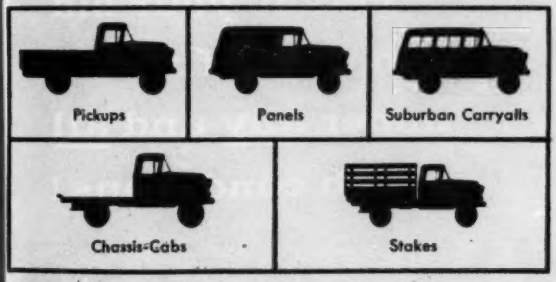
WHEEL DRIVE ENABLES YOU COULDN'T BEFORE!

Chevrolet's new 4-wheel drive really digs in and does it . . . enables you to haul through deep mud, snow, swampy areas and up towering grades. With up to twice the traction, wheels are able to grab hold and go!

An easy shift of a lever . . . and you've got *traction* that bites in and pulls with the tenacity of a light tank!

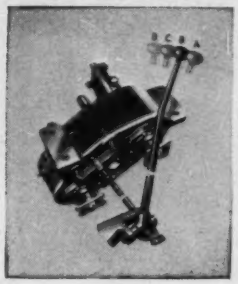
This new Chevy unit is the latest thing in 4-wheel drives. Consisting basically of a rubber-mounted power divider with precision-engineered front axle, it distributes power evenly to front and rear axles. And when the going is extremely difficult, it directs power to whichever axle is getting the best traction. Result: Your load goes through, whether the road does or not!

CHEVROLET 4-WHEEL DRIVE SUITS MANY MODELS



Fourteen tough-built Chevy models whip rough-and-tumble terrain like never before! There are 4-wheel drive *pickups* for ploughing, grading, snow removal jobs, and others . . . *panels* for surveying, delivery, and construction tasks . . . *Suburban Carryalls* for sportsmen and tough cargo-and-passenger-carrying jobs . . . *stakes* for work that calls for heavy back-country hauling . . . and *chassis-cabs* for a broad range of special applications!

EASY SINGLE-STICK CONTROL



One easy motion operates the power divider. Shifting between 2-wheel drive and 4-wheel drive can be done whether the truck is stopped or moving. Lever has these 4 positions:

a. 4-wheel underdrive
b. Neutral
c. 2-wheel direct
d. 4-wheel direct

POWER FOR SPECIAL EQUIPMENT

Four power take-off outlets permit use of a wide variety of special equipment: saws, generators, winches, pneumatic hammers, post-hole diggers, back hoes, and many more! SAE 6-bolt outlet is on transmission; other outlets are on power divider.

Get complete information on new Chevrolet 4-wheel drive!

MAIL THIS COUPON TO COMMERCIAL & TRUCK DEPARTMENT, CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN

Name _____

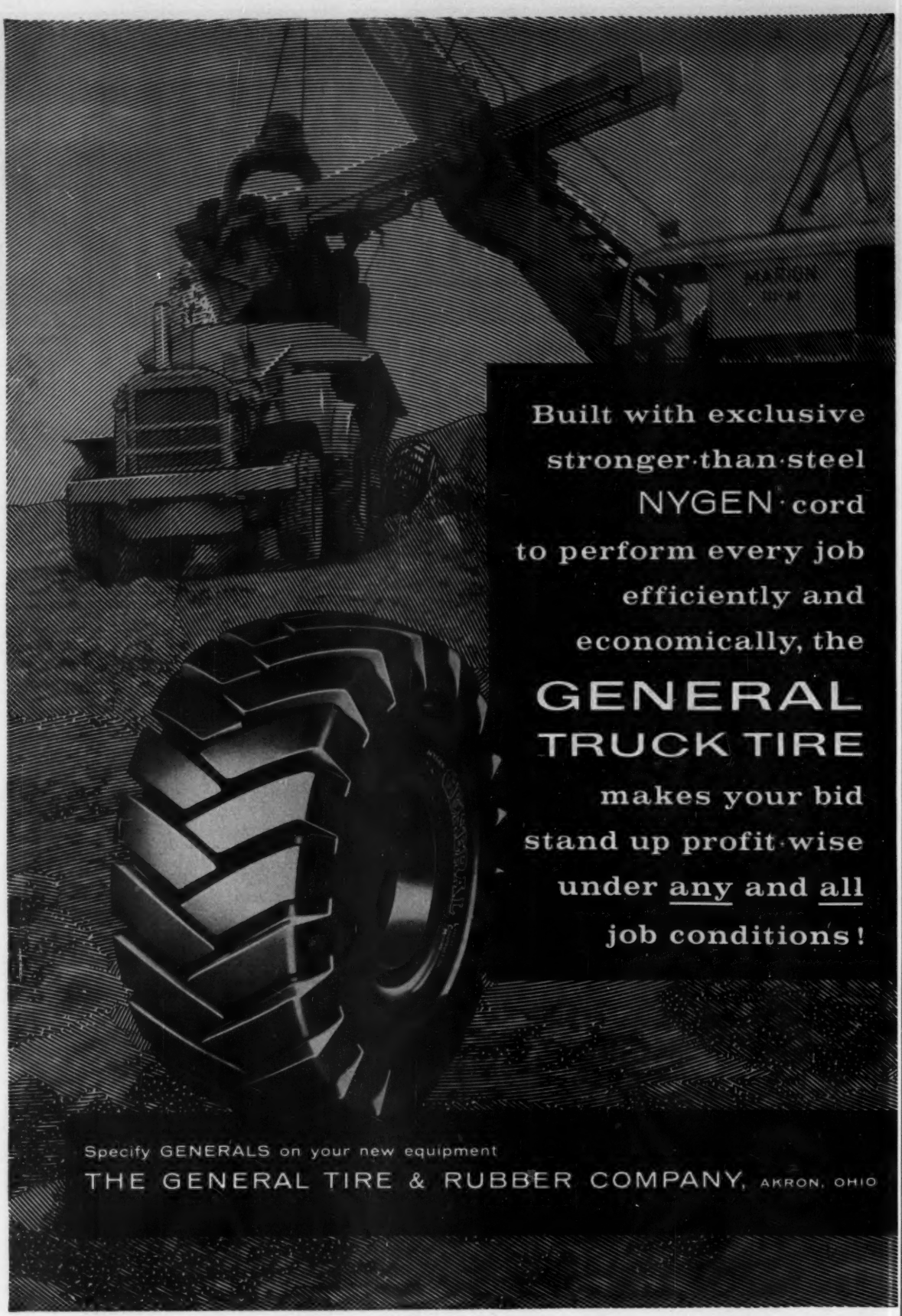
Address _____

City _____ Zone _____ State _____

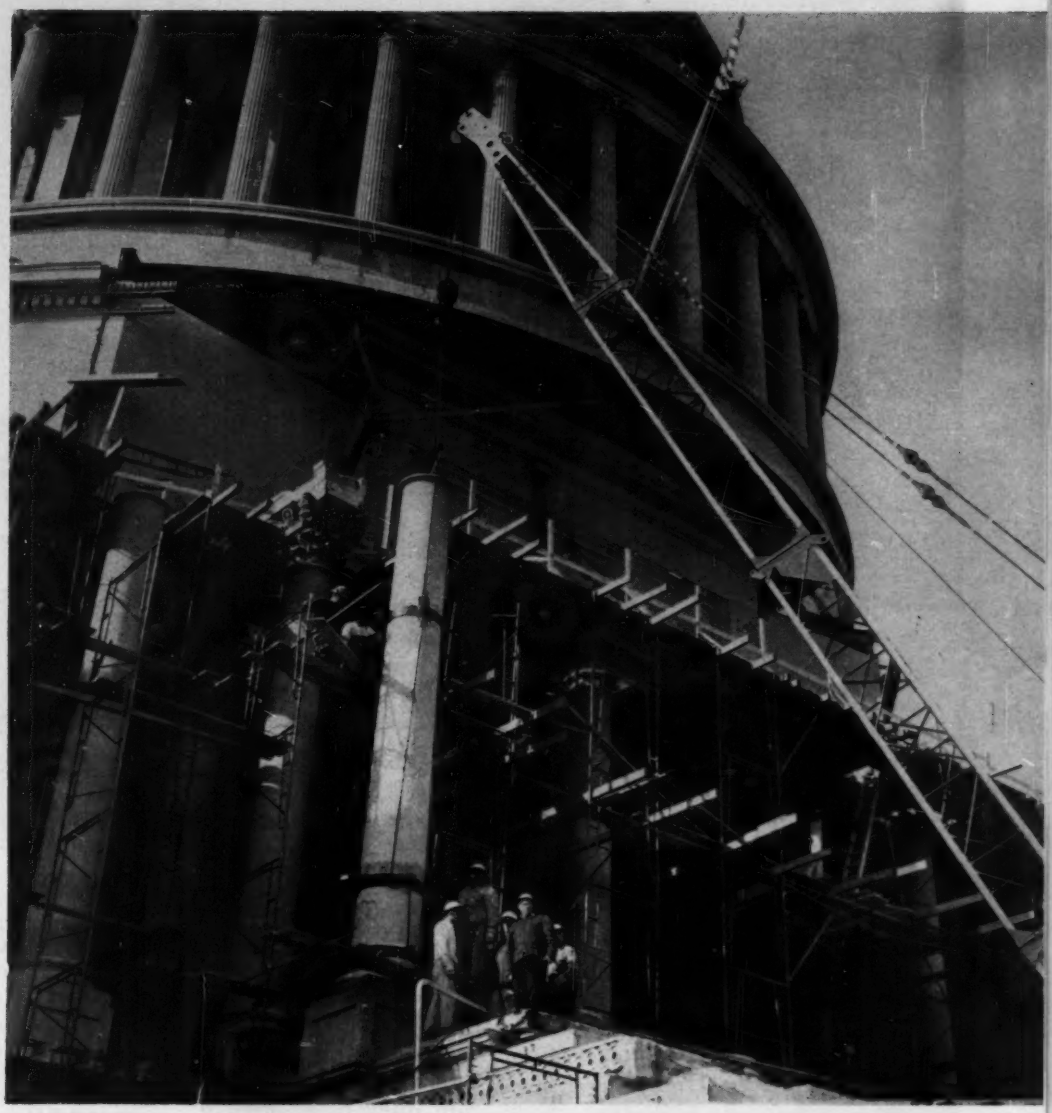
(CM-2)

See your nearby Chevrolet dealer about versatile 4-wheel drive in

CHEVROLET TASK·FORCE 59 TRUCKS

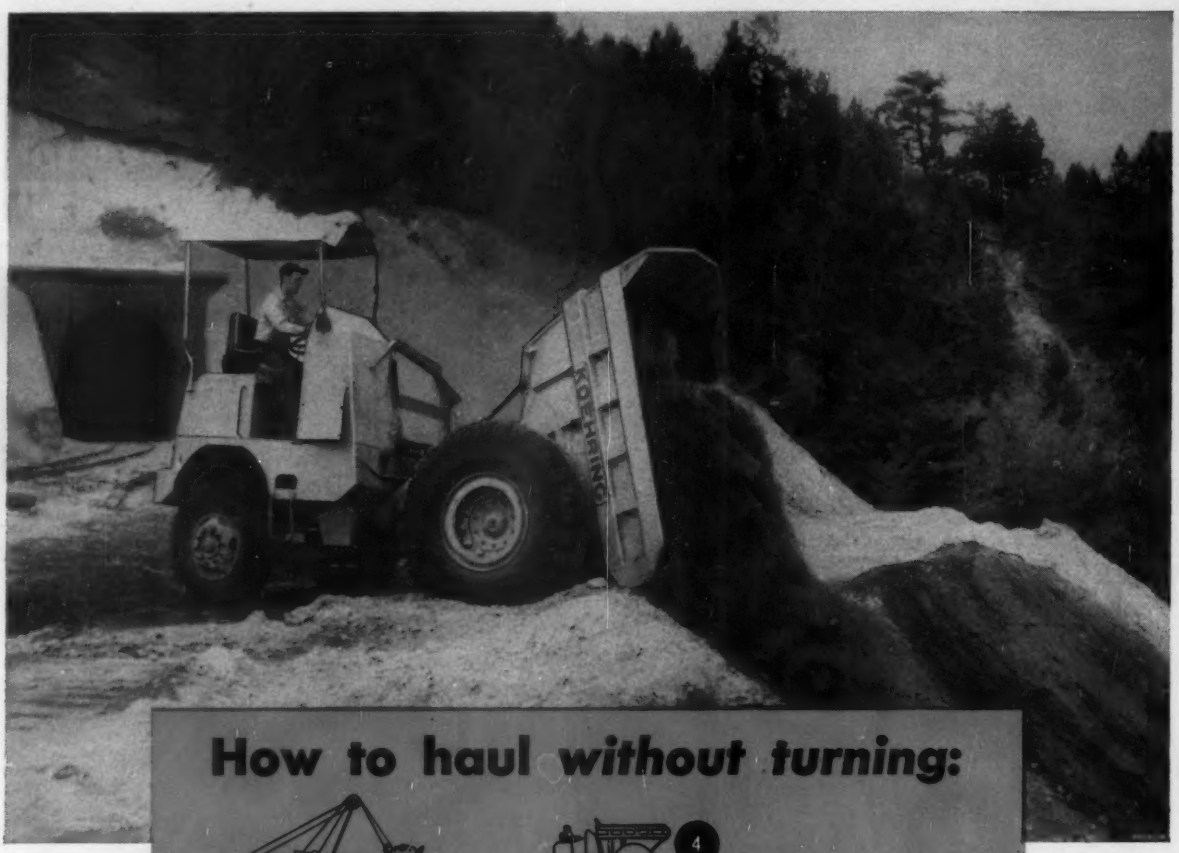

Built with exclusive
stronger-than-steel
NYGEN-cord
to perform every job
efficiently and
economically, the
GENERAL
TRUCK TIRE
makes your bid
stand up profit-wise
under any and all
job conditions!
Specify GENERALS on your new equipment
THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

PICTURE OF THE MONTH

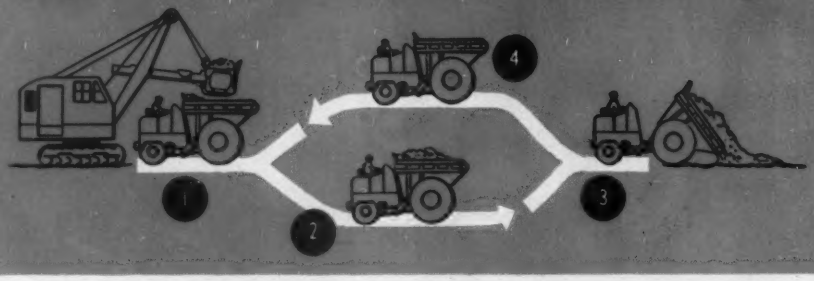


New Face for the Capitol

• While the Congress meets inside, a construction crew is dismantling the east face of the Capitol in Washington, D.C. McCloskey & Co. of Philadelphia holds the contract for a rebuilding job that includes extending the central portion of the east face of the building out 32½ ft to make room for new offices, restaurants, storage rooms, and improved access facilities between the House of Representatives wing at one end of the building and the Senate wing at the other end. The new facade will be a duplicate of the old one except that marble will replace the present sandstone.



How to haul *without turning:*



1. **Dumptor gets load, with body forward in travel position.**
2. **Pulls away from shovel, body forward, ready to dump.**
3. **Dumps in one second — ready to shuttle back for next load.**
4. **Returns to shovel in high gear — all without turning.**

Shuttling between loading unit and dump area, Koehring® 6-yard Dumptor® travels round-trip *without turning*. It operates with equal ease in *both directions* along narrow haul roads, in tunnels, on overhead trestles — is especially practical for stockpiling, feeding crushers, loading cars. Dumptor gets this unique, no-turn advantage through a constant-mesh transmission that gives the same 3-speed travel in either direction.

Increases hourly output over 10%

By eliminating at least two slow turns on every trip, Dumptor cuts 30 seconds off normal cycle-time. This adds up to a substantial increase in yards or tons hauled per hour. For example — take a typical 1,000-foot haul where you are getting an average of 13.6 trips an hour with 2-turn operation. Even if Koehring Dumptor took the same time to load, haul, dump and return, its *no-turn* advantage would give you 15.4 trips. That adds up to an increase of 1.8 trips an hour on the same 1,000-foot haul.

Gravity-dumping cuts another 15 to 25 seconds off cycle-time. There's no waiting for slow-acting body-hoists. Operator trips the release lever, and *gravity* dumps the 6-yard load in *one second*. Costs stay low, because with gravity-dump, there are no expensive hoist replacement parts, or hoist maintenance.

Check what these Dumptor advantages mean in increased production, lower costs on your work. Call your Koehring Distributor or write for more information to:

KOEHRING DIVISION of Koehring Company, Milwaukee 16, Wisconsin

K812

"Also ask about new 10-yard Dumptor"

KOEHRING® DUMPTOR®

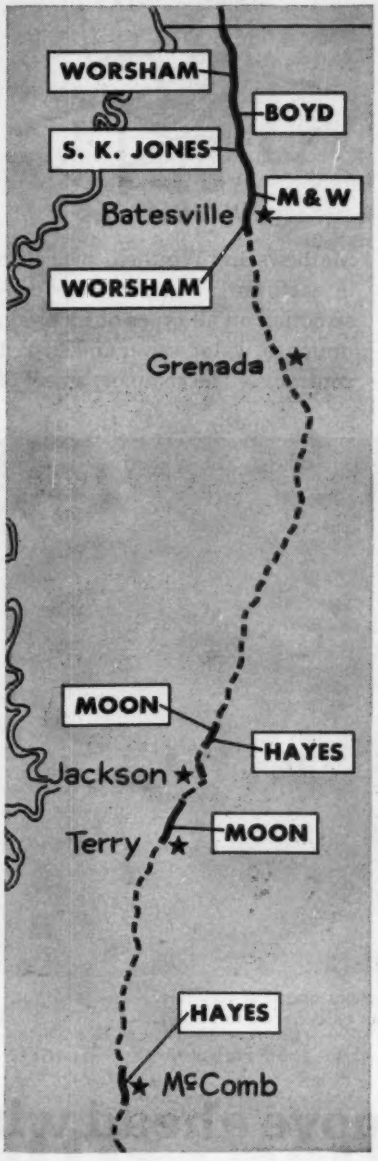
EXCAVATORS • CRANES • *twinbatch*™ PAVERS • FINISHERS • MUD-JACK™

(Advertisement)

CONTRACTORS FIGHT "WORST WEATHER IN HISTORY" TO

Punch new interstate main line through Mississippi

With big fleets of Allis-Chalmers construction machinery, contractors battle wet weather to move millions of yards of tough Mississippi clay, mud, sand and gumbo. More than 140 miles of the state's 676-mile proposed interstate system is currently completed, under construction, or awarded. The main line is U.S. 55 which runs generally parallel to U. S. 51 from the Tennessee line near Memphis south through Jackson to the Louisiana line. The new road will have a minimum of four lanes, be controlled access and are planned for expansion to six or eight lanes, if necessary. A check of the jobs in progress shows some of the problems . . . and how the contractors are solving them.



Worshams Work Near Tennessee Line

Worsham Brothers, contractors from Corinth, Mississippi, are working a five-mile section of U.S. 55, between Aldens and Hernando, Mississippi, near the Tennessee line. About a million yards of dirt is involved in the $986,000 contract. An additional four-mile section of U.S. 55, immediately south of Batesville, has been awarded to Worsham Brothers on a bid of $923,000. Work will begin in the early spring. The firm, a partnership of three brothers, Frank, Clifford and LeRoy, specializes in airport and highway construction in Mississippi, Alabama and Tennessee. The Worshams are using big tractors, motor scrapers and motor graders from their Allis-Chalmers fleet to keep the Interstate 55 job well ahead of schedule. Moving 9,000 to 15,000 yards every 10-hour shift, the company is making the most of every working day. By October, 1958, they had completed 62% of the work, with only 52% of the contract time elapsed.

Frank Worsham, Jr.

(Continued on next page)

Heaped scrapers kept constantly on the go during the rare dry periods is the Worsham Brothers formula for beating bad weather and tough dirt.

...move ahead with ALLIS-CHALMERS

Punch Main Line Through Mississippi

Boyd Builds Highways on the Run

Averaging up to 18 miles per hour — hauling 12,000 to 17,000 yards of sandy silt every 10-hour working day — keeps the Boyd job ahead of schedule. The Boyd Construction Company, Grenada, Mississippi, is working a seven-mile section of U.S. 55 between Coldwater and Senatobia. Eighty percent of the yardage is being handled by Allis-Chalmers TS-360 motor scrapers — with fast, effective loading boosts from Allis-Chalmers HD-21 crawler tractors.

Moving earth at high speed is a Boyd specialty. The company, in business since 1939, handles contracts averaging 1½ to 2½ million dollars annually, covering general highway and bridge construction and earth moving, as well as levee work on the Mississippi River.

On the U.S. 55 job, more than 2¼ million yards of fill are being

John Boyd

moved from borrow pits to build a 4-lane roadway across the headwaters of the Arkabutla Reservoir.

Unusually wet weather permitted only 20 working days during the first 5 months of last year. Now, Boyd is counting on his Allis-Chalmers machines to make up for lost time. The big TS-360's hauling 7 to 9 loads per hour on cycles up to 2 miles, are averaging up to 1,400 yards every 10-hour working day. The sandy silt coming out of a 2,000,000-yard borrow pit is running 3,000 pounds to the yard — yet Boyd's TS-360's are making excellent time in spite of spongy haul roads.

Wet Clay Complicates M & W's Section

W. C. Mathews and H. M. Whitfield are M & W Contracting Company of Tupelo, Mississippi.

W.C. Mathews

Mathews and Whitfield specialize in earthwork and structure construction on all types of highway, drainage, water, sewer and airport contracts. The company's fleet of

High-speed hauling helps the Boyd Construction Company keep its sections ahead of schedule. These 20-yd Allis-Chalmers motor scrapers average 7 to 9 loads an hour on cycles up to 2 miles.

...move ahead with

Allis-Chalmers motor scrapers, tractors and motor graders is rapidly completing the last cut and fill on the company's 5½-mile section of U.S. 55 during a mid-November survey of the job.

The $1,832,000-contract calls for 1,300,000 yards of excavation and 10 structures. Two of the structures are connected with a channel change on the Talahatchie River, where a horseshoe bend will be straightened and the old bed filled.

Mathews pointed to two reasons for this being his toughest stretch of road since his stint, during World War II, on General Pick's staff, building the Ledo Road in Burma. The two obstacles — wet weather and a subsurface strata of heavy red clay that stayed wet, even during the rare dry periods. The clay strata hampered all contractors working Mississippi's interstate main line U.S. 55 from the Tennessee line south to Batesville. Beginning two to three feet below the surface, it ran down far enough to plague most of the cutting operations. Invariably, Mathews pointed out, we'd get down to grade just as we were getting to good dirt!

M & W's Allis-Chalmers fleet helped beat both problems by moving heaped scrapers of the tough clay on a 10-hour-a-day, 6-day-a-week schedule . . . whenever weather permitted. Both men and machines performed so well that M & W's section is well ahead of schedule — 58% complete, with only 34% of contract time elapsed by October, 1958. This kind of performance is one reason for M & W's standardization on Allis-Chalmers construction machinery in the twelve years since they went into business.

S. K. Jones Awarded Four-Mile Section

The four-mile section between Senatobia and the State-Panola County line was awarded to S. K. Jones Construction Company, Memphis, Tennessee. The company began work with its Allis-Chalmers fleet in December, 1957, and with more than 900,000 yards of material to move, has managed to stay on schedule during the prolonged wet weather. The Jones Company's contract figure of about $641,000 includes four structures.

Moon Works Three Subcontracts for Interchanges and Frontal Roads

John H. Moon & Sons, Ridgeland, Mississippi, holds subcontracts on three sections of the new interstate main line. Two of these,

John H. Moon

between Jackson and Ridgeland and at Byram, Mississippi, call for structures only. The third, a four-mile section between Jackson and

(Continued on next page)

(Left) One of M & W's Allis-Chalmers motor graders handles finish grading in the cut. (Right) Top maneuverability of Allis-Chalmers motor scrapers lets M & W's big tractor-scrapers load in both directions . . . saves time by reducing travel for pusher tractors.

ALLIS-CHALMERS...power for a growing world

Punch Main Line Through Mississippi

Terry, is for construction of two underpasses and four frontage road bridges to convert present U.S. 51 to the controlled access U.S. 55. More than 630,000 yards of excavation is required. Moon is using medium-sized Allis-Chalmers motor scrapers and Allis-Chalmers crawler tractors to handle the earthwork — building frontal roads, approaches to overpasses and cutting drainage ditches. His hydraulically controlled scrapers, with positive down pressure — available only in Allis-Chalmers motor scrapers — are very effective on close-quarter ditch work where deep, short cuts are required. October reports show Moon has completed 47% of the work in only 33% of contract time.

Hayes Has Two Main Line Jobs

In each of the past ten years, J. R. Hayes Construction Company, Paris, Tennessee, has moved 10,000,000 yards of earth — or more. In addition to its highway

J.R. Hayes

contracts, the company handles clay stripping, street and airport work and asphalt paving in Mississippi and Tennessee. Right now, the firm is under contract to move a total of 5,000,000 yards on five jobs.

One of these is the 7½-mile section of interstate highway 55 near McComb, Mississippi—more than 1,500,000 yards to be moved in 360 workingdays. Hayes' fleet

Positive, hydraulic down pressure on the scraper bowl and plenty of push from the Allis-Chalmers torque converter crawler help operators cut a short deep drainage ditch on John H. Moon & Sons' job.

Three of J. R. Hayes' big Allis-Chalmers TS-360 motor scrapers are shown in the cut. Loads like the one on the right, plus excellent cycle time, helped keep work ahead of schedule in spite of bad weather.

...move ahead with

of Allis-Chalmers TS-260 and TS-360 motor scrapers moves as much as 15,000 cubic yards per 10-hour day — more than 100 loads per day per machine with hauls ranging from 500 yards to a mile (one way). With this kind of performance, Hayes expects to complete the job ahead of schedule, in spite of bad weather.

Another Hayes job on the Mississippi main line is a three-mile section between Jackson and Ridgeland. The $159,000-subcontract calls for more than 452,000 yards of excavation to rebuild the existing two-lane road, add a second double-lane roadbed and construct access roads to bring the existing U.S. 51 up to interstate specifications.

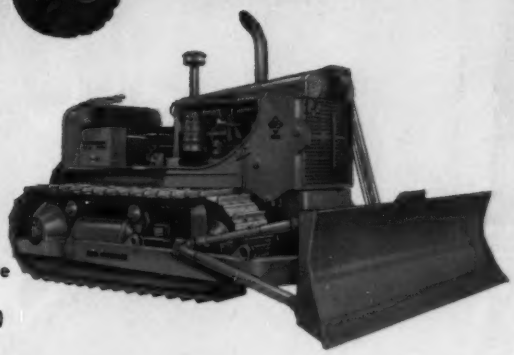
Hayes' fleet of Allis-Chalmers large and medium-sized motor scrapers heap loads in fast . . . average more than 100 loads per day per machine on hauls up to a mile.

As the story indicates, Mississippi highways are moving ahead at a rapid pace with Allis-Chalmers construction machines in the thick of the action. Performance on jobs like this proves their work capacity as the national highway system spreads across the country. Ask your dealer to show you Allis-Chalmers equipment at work on the *big* jobs in your area. Then, talk to the owners for the real low-down on Allis-Chalmers production ability. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

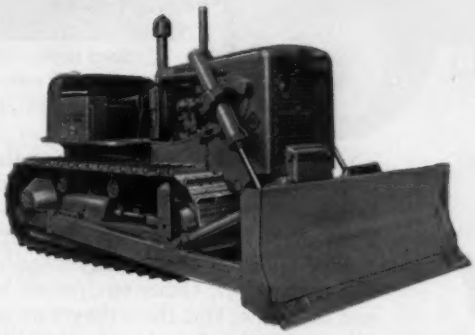
Machines like these set the pace

TS-360
20 yd heaped
280 hp
49,050 lb (approx.)

TS-260
17 yd heaped
230 hp
39,600 lb (approx.)



HD-21
225 net engine hp
Torque converter drive
56,260 lb
(approx. as shown)



HD-16
Torque converter drive
150 net engine hp
39,090 lb
(approx. as shown)
All-gear drive
148 net engine hp

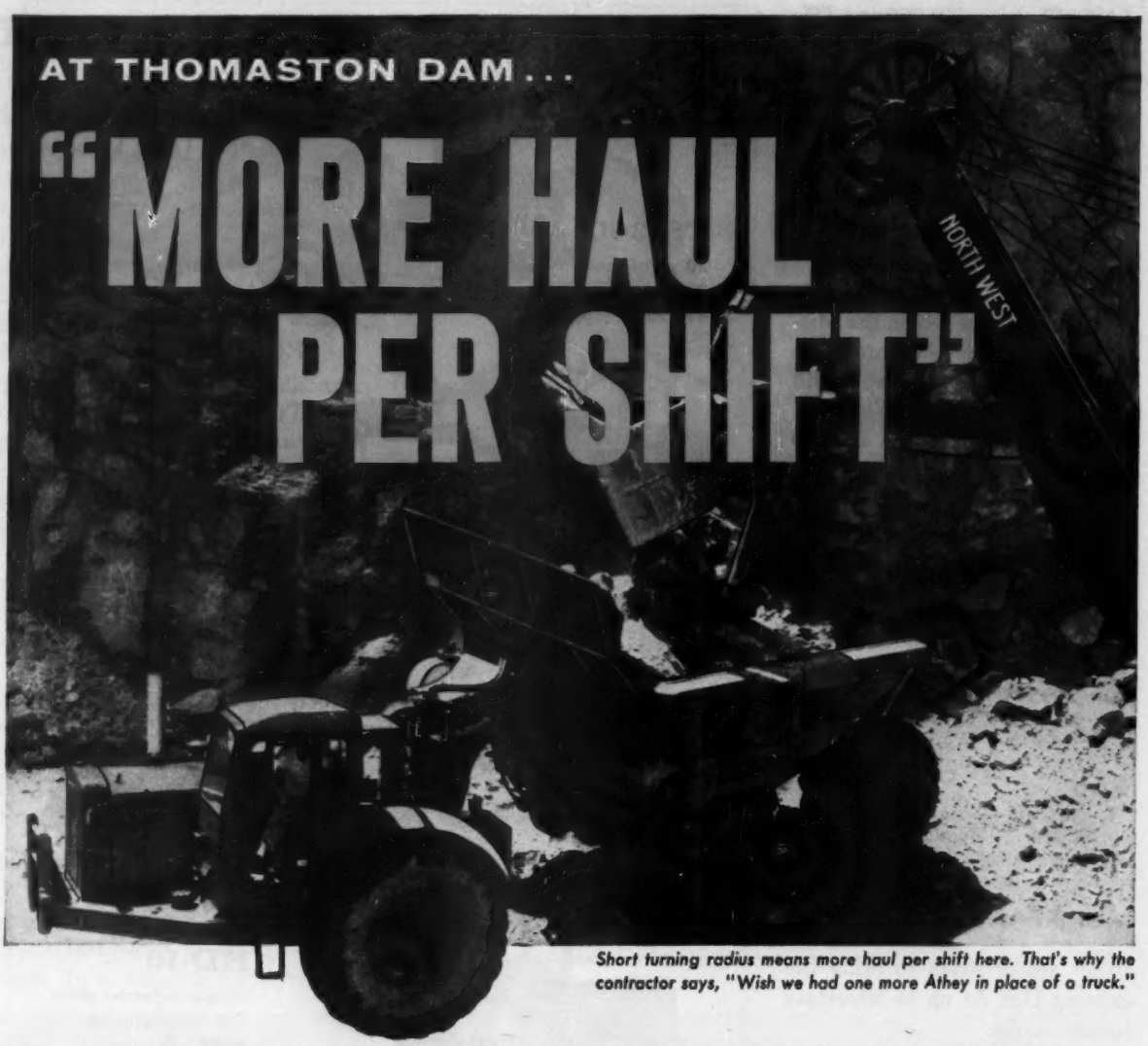
FORTY FIVE
120 hp
6 speeds forward to 20.6 mph
3 speeds reverse to 7.0 mph
23,800 lb (approx.)

A-C

ALLIS-CHALMERS...power for a growing world

AT THOMASTON DAM...

"MORE HAUL PER SHIFT"



Short turning radius means more haul per shift here. That's why the contractor says, "Wish we had one more Athey in place of a truck."

Athey

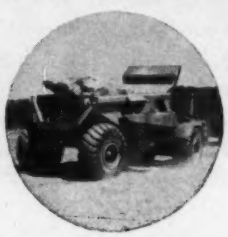
PRODUCTS CORPORATION
5631 West 65th Street
Chicago 38, Illinois

PR21
REAR DUMP TRAILER

Three of the huskiest workers at the Thomaston flood control dam in Connecticut are Athey-Cat rear dump trailer units. These PR21-DW21's average 18 cu. yds. a load—but 22 cu. yds. is not uncommon. They make 33 trips a day . . sprint up a 14% grade without breaking stride. Their toughest assignment? Hauling rock, gravel and clay out of a narrow cut. Other equipment had to back up to the shovel here—and lost time. But the Athey-Cat team drives in AND out . . . a complete trip takes just 14 minutes, including 800 ft. haul and 800 ft. return. Oneglia & Gervasini, contractors at Thomaston, say they can count on a full 6-day work week from each unit with no downtime.

Want to cut per-yard hauling costs? See your Athey-Cat dealer—or write us direct—for performance reports and folders on the PR21.

33½-ft. turning diameter lets Athey-Cat unit take the short cut in a narrow cut and leave trucks far behind.



Big rocks are no problem — PR21 has 22 cu. yd. capacity and easy-loading body design.

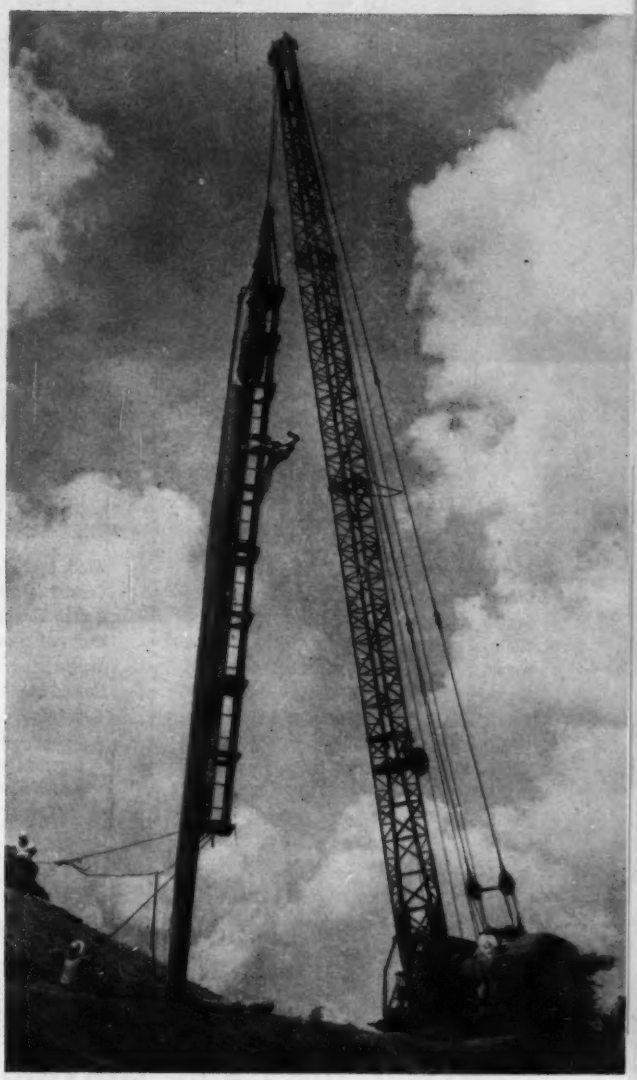
Construction News in Pictures . . .

Florida's Pipeline

A pair of Allis-Chalmers side-boom tractors lift a section of the 1,517-mile pipeline that will deliver natural gas from Texas to southern Florida. Harbert Construction Corp. of Birmingham, Ala., is laying in pipe for a section along the right-of-way of Florida's Sunshine State Parkway at the respectable rate of at least two miles a day.

New Compactor

A special 1,500-lb roller on a 6-ft boom extension makes an effective compactor of a truck-mounted Gradall. Down thrust of the Gradall's boom and the weight of the roller combine to do a fast job of compacting the steep slopes of a bridge approach in Long Beach, Calif. McWhorter Crane Service adapted the versatile Gradall for the job.



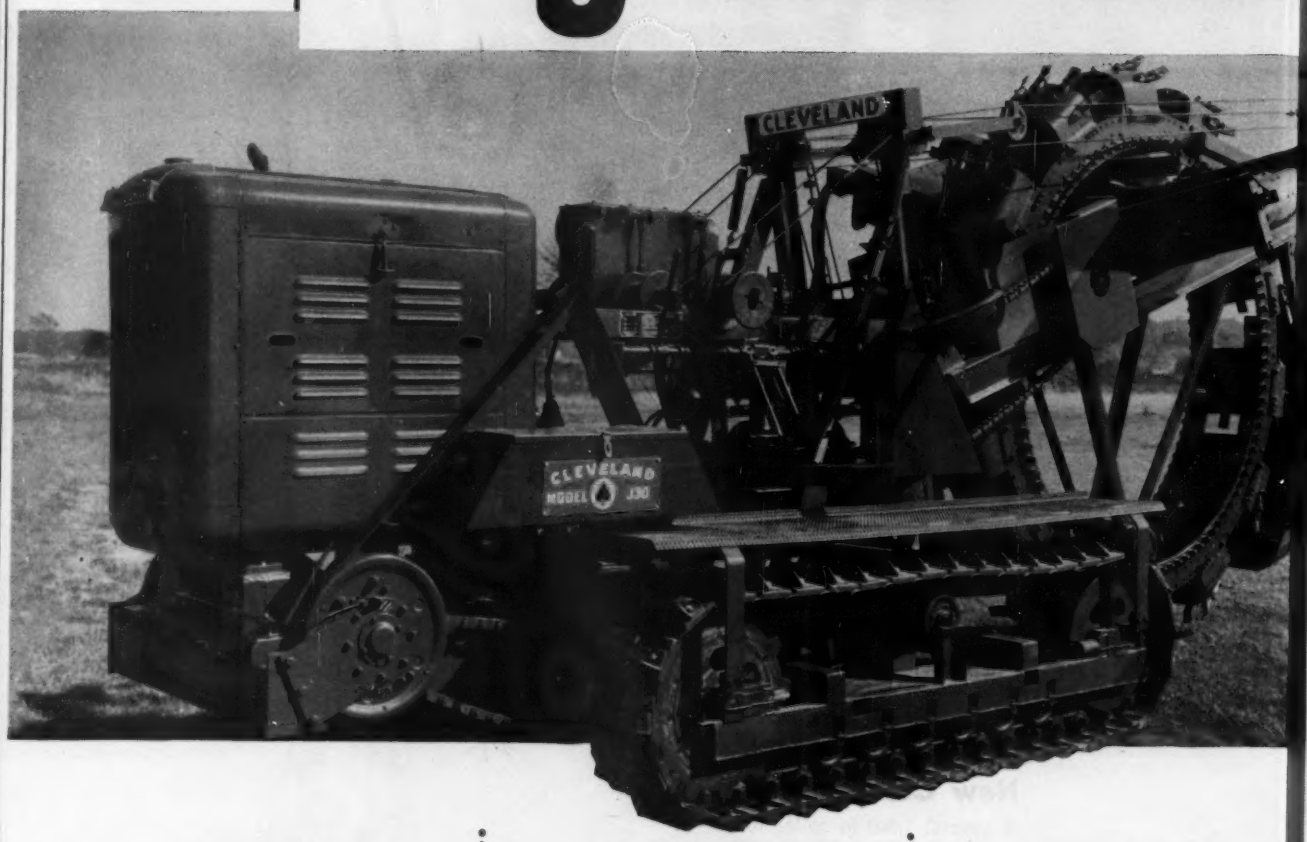
No Trouble With Batters

With swinging leads hung from a Koehring crane, Maxwell Bridge Co. of Columbus, Kans., drives 14-in. spiral weld pipe pile for a highway bridge in Missouri. Maxwell handles sharp batters by anchoring the base of the leads with ropes to a dozer that acts as temporary deadman. L. B. Foster Co. supplied the piles, mostly in 50-ft lengths.

continued on page 78

Announcing

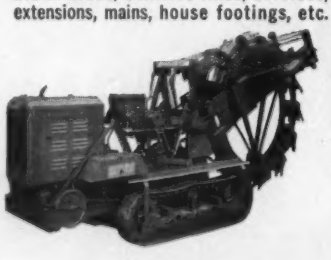
3 GREAT NEW



The J-20

Width over crawlers ..... 4′ 10″
Crawler length, C.C. ..... 6′ 3″
Overall length .....21′ 6″
Width of crawler shoe ..... 10″
Weight ..... approx. 13,500 lbs.
Ground bearing pressure ..... 8.8 psi.
Cuts trench 13″ to 24″ wide, to 5′ 6″ deep

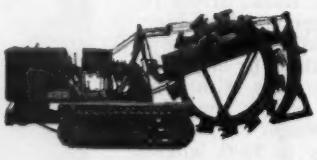
Principal applications:
urban areas, utilities lines, services, extensions, mains, house footings, etc.



The J-30

Width over crawlers ..... 6′
Crawler length, C.C. ..... 6′ 9″
Overall length .....22′
Width of crawler shoe ..... 14″
Weight ..... approx. 15,000 lbs.
Ground bearing pressure ..... 6.5 psi.
Cuts trench 13″ to 24″ wide, to 5′ 6″ deep

Principal applications:
suburban areas, drainage, utilities, gathering lines, footings, septic tanks, leach beds.



The J-40

Width over crawlers ..... 8′
Crawler length, C.C. ..... 7′ 6″
Overall length .....23′
Width of crawler shoe ..... 18″
Weight ..... approx. 18,800 lbs.
Ground bearing pressure ..... 5.6 psi.
Cuts trench 17½″ to 30″ wide, to 5′ 6″ deep

Principal applications: trench up to 30″ wide —pipelines, waterlines, drainage, irrigation, sewer lines, utilities.

...with the basic Cleveland characteristic... *Quality*

CLEVELAND TRENCHERS

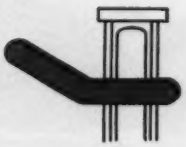
with ...revolutionary new V conveyor

...world's finest trencher crawlers

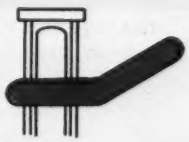
...all operations controlled at operator's seat

V CONVEYOR ... provides maximum clearance under digging wheel rims ...allows higher heaped loads without clogging ... provides constant elevating angle for faster, higher spoil discharge ... reduces rolling and tumbling ... has stronger torsion-free construction ... employs huskier, longer-lived bearings.

AUTOMATIC CONVEYOR SHIFT ... operator controls hydraulic shifting and positioning of conveyor ...digs past poles, trees, shrubs ... places spoil where needed ... *all* without leaving seat, without interrupting other operations.



DUAL INDEPENDENT CONVEYOR DRIVE ... identical, self-contained hydraulic motor and planetary gear drives in each head-pulley eliminate *all* conveyor chains and sprockets ... reduce belt slippage and wear ... furnish operator fingertip control of conveyor belt direction and speed (215-1,000 fpm) independent of all other operations.



FINEST CRAWLERS ON ANY TRENCHER ... employ double flanged wheels, rollers and sprockets with wide-spaced teeth ... drives on each end of 1½" dia. hardened pins ... completely eliminates pockets for dirt, stones, etc. ... eliminates take-up devices ... gives greater track stability ... lengthens wear life ... sprockets, wheels and idlers ride on sealed ball or roller bearings requiring only 200-hour lubrication ... a tremendously long-lived, trouble-free, easy-rolling crawler track.

BIG 16"x3" HYDRAULIC STEERING BRAKES ... controlled by suspended-type foot-pedals ... provide simple easy steering and maneuvering.

HYDRAULIC CRUMBING SHOE ... now, crumbing shoe advantages (cleaning, grading) are practical even in crowded digging ... Cleveland's hydraulic shoe control (optional, extra) pivots shoe back and up to allow setting wheel to required depth at walks, drives, underground obstructions, etc.

Engine, Hoist, Wheel, Shoe, Conveyor Speed—Direction—Shift, Crawlers

...Every Operation Controlled at Operator's Seat.

Good Everywhere

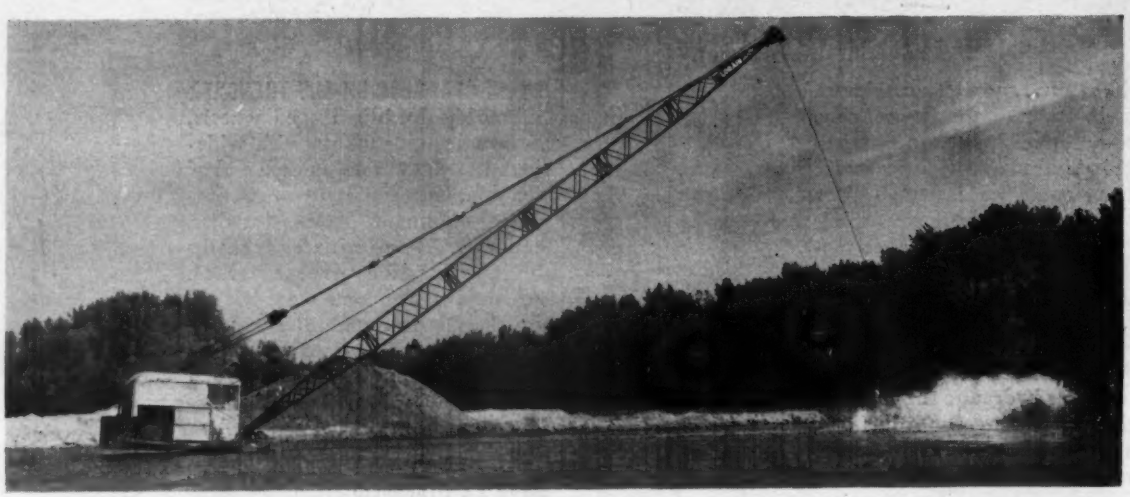
The CLEVELAND TRENCHER Co.

Pioneers of the Modern Trencher

20100 St. Clair Avenue
Cleveland 17, Ohio

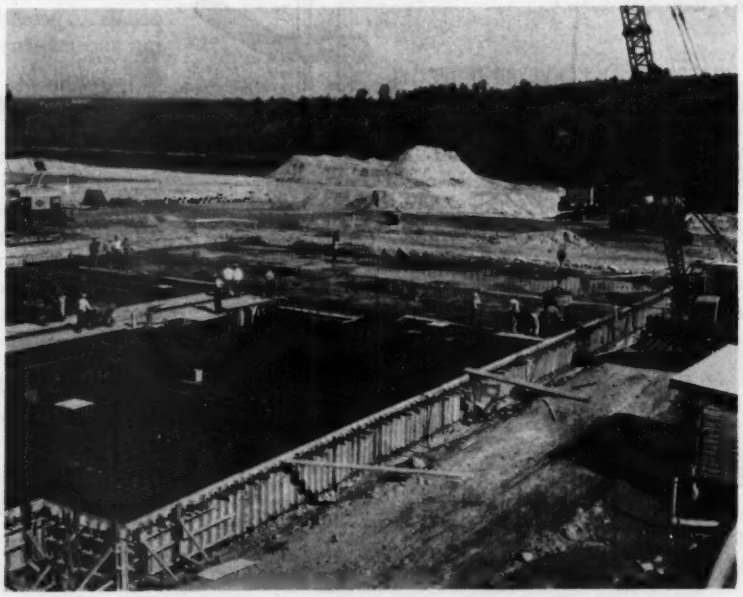
Ohio River Dam

First stage cofferdam for the New Cumberland Dam on the Ohio River at Stratton, O., consists of 19 steel sheet pile cells each 55 ft in diameter. The cells are driven to rock, filled with sand and gravel, and capped with concrete. Dravo Corp. is contractor for the $13.5-million dam. First stage work will be completed this summer.



Wading Crane

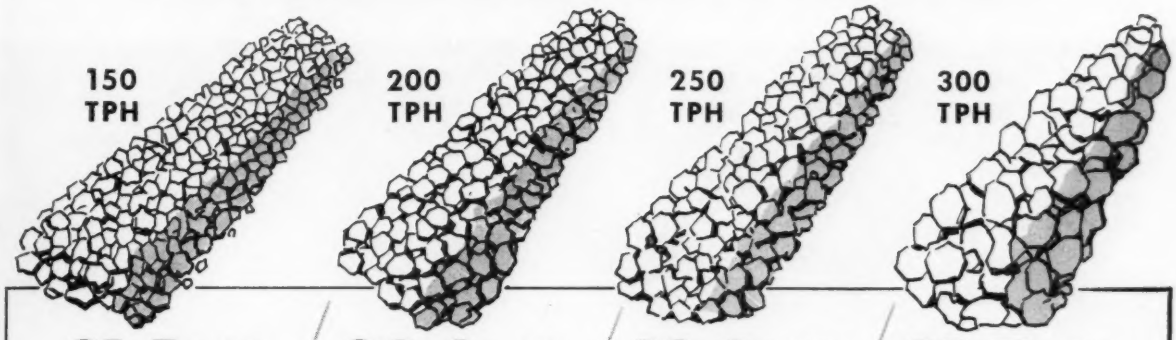
Lorain crane with 70 ft of boom and a ¾-yd dragline bucket wades out into the Mississippi River in Minnesota to dig a trench 20 ft deep and 500 ft long in the river bottom. Hage Bros. of Owatonna, Minn., are digging the trench for a 24-in. natural gas pipeline. Depth of the trench will permit future navigation channel dredging.



Massive Foundation

A 209x120-ft concrete mat 5 ft thick will form the base for the generator and boiler of the $24.5-million Merrimack Station steam power plant in New Hampshire. Sanders Construction Co. of Portland, Me., made a continuous pour of the 4,597-cu-yd monolithic slab. They used a special concrete mix with Plastiment retarding-densifier.

How do the prices you pay for subbase materials compare with these?



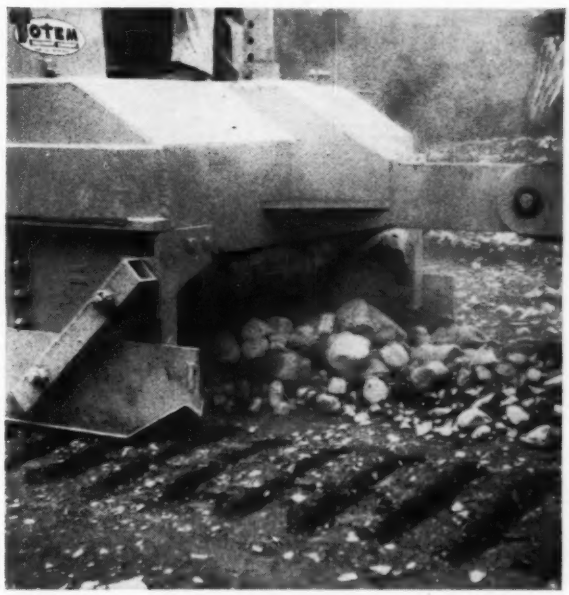
31.5¢ PER TON / **23.6¢ PER TON** / **18.8¢ PER TON** / **15.7¢ PER TON**

THESE ARE COSTS BASED ON PREPARATOR IN-PLACE PRODUCTION

In-place production of subbase materials from windrowed bank-run or native over-size materials by the BROS Preparator is producing outstanding cost savings in many parts of the country and the world. The costs per ton shown here are based on conservative averages; compare your present material costs with them. The Preparator can make sizeable cost savings for you, too.

Cost of BROS Preparator, amortized over 3 year period, averaging 1,000 hours production per season, and including fuel, changing hammers (but not hammer cost) and regular maintenance.....$ 9.16 per hour
Tow tractor or grader operating cost.. 8.40 per hour
Set of BROS ALLOY hammers(22), av. production per set, 16 hours..... 29.70 per hour
Total hourly operating costs.....$47.26 per hour
Cost at 150 tph production rate....31.5 cents per ton
Cost at 200 tph production rate....23.6 cents per ton
Cost at 250 tph production rate....18.8 cents per ton
Cost at 300 tph production rate....15.7 cents per ton

Production rates will vary with the type of materials and the sizes required. Production exceeding 300 tph has been very frequent. Hammer wear also varies with type of material; with but several exceptions, wear has averaged 16 or more hours production on every job. Material reduced from native over-size has sharp friction angles which contribute to resistance to displacement under traffic loads.



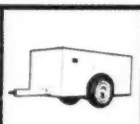
The Preparator is a tough, rugged machine, reducing all types of materials from limestone to blasted lava rock to acceptable subbase gradations. Your nearest BROS Dealer has the latest information on the Preparator; see him this week.

BROS *Incorporated*
ROAD MACHINERY DIVISION

1057 TENTH AVE. S.E.
MINNEAPOLIS 14, MINN.

Write today for the full report on the Ohio tests and for complete new literature describing the new BROS SP-730 pneumatic roller. It's free of cost or obligation!

SHEEPSFOOT TAMPERS


ROLL-O-PACTOR

BITUMINOUS CIRCULATOR

VIBRA-PACTOR

9-TON SELF-PROPELLED ROLLER

9 AND 13-TON ROLLERS

ONLY MSA GIVES YOU T

Head protection, yes — but more than that — the *right* head protection for specific jobs and conditions has been a major concern of ours for over 30 years.

In this time, we have scored a number of head protection "firsts," but this isn't the important thing.

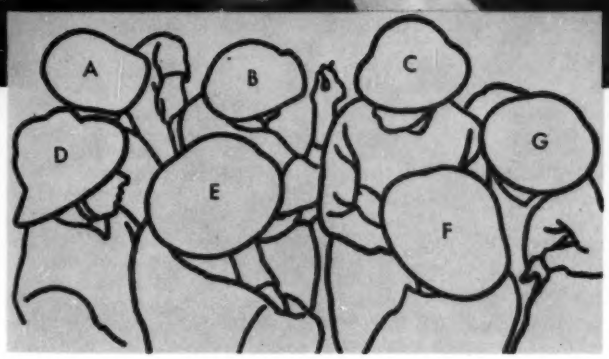
The significant point centers on the fact that the continuing additions to our hat line give you that all-important advantage of *hat selection.*

All-important because no one hat is best for every hazard. Important, too, because this extensive hat selection lets your MSA representative concentrate on your protection needs without the restriction of product limitations.

Call him in. He'll be glad to talk about your problems and recommend solutions that fit your operation. Mine Safety Appliances Company, 201 North Braddock Avenue, Pittsburgh 8, Pennsylvania.

MSA . . . where safety problems become safety products through research

U THIS HAT SELECTION



A. M-S-A Aluminum Type "T" Cap B. M-S-A Type "B" Skullgard C. M-S-A Shockgard D. M-S-A Fireman's Helmet E. M-S-A Type "K" Skullgard F. M-S-A Glass Fiber Hat G. M-S-A Aluminum Type "T" Hat

MSA

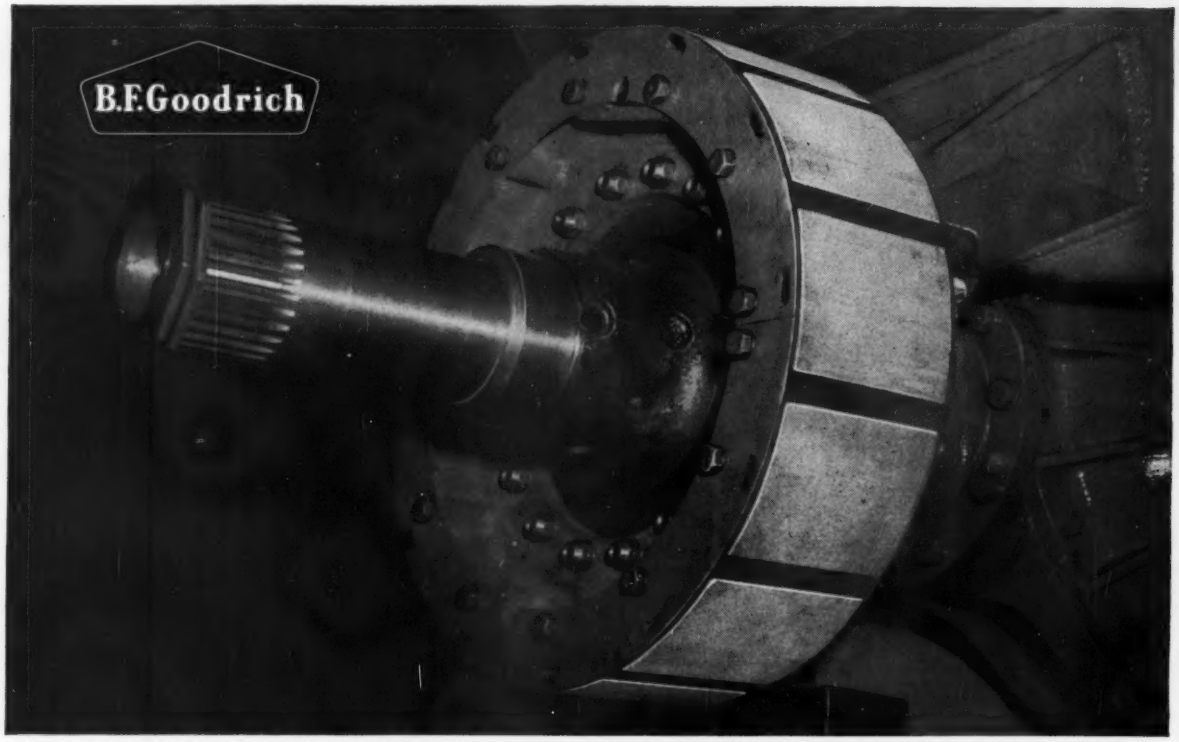
SAFETY EQUIPMENT HEADQUARTERS

OVER 3600 SAFETY ITEMS

...a single source of supply for gas and dust instrumentation, head-eye-face protection, dust and fume respirators, oxygen breathing apparatus, gas masks, artificial resuscitation units, first aid supplies and kits, noise detection and ear protection devices, instruments for continuous process stream control, ventilation equipment, and many other items.

MINE SAFETY APPLIANCES COMPANY

Pittsburgh 8, Pennsylvania



The *only* off-road brake with *full circle stopping power*

Tests prove the B.F.Goodrich Hi-Torque Brake can stop your heavy equipment faster, safer!

Tractor-Scraper Test

	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Stopping distance	41′ 9″	72′
Speed	14.83 mph	15.17 mph
Load	heaped	heaped

Two identical tractors and scrapers were used for this test. Unit fitted with B. F. Goodrich Brakes stopped almost twice as fast as unit using regular production brakes.

Off-Highway Truck Test

	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Deceleration rate	18 Ft/sec^2	7 Ft/sec^2
Speed	25 mph	25 mph
Gross vehicle weight	112,000 lbs.	112,000 lbs.
Wheel condition	sliding	rotating

Popular 24-ton capacity off-highway truck with original production brakes was run over test course. Immediately after fitting the same vehicle with B. F. Goodrich Brakes, the truck made the same run again, stopping almost *two and a half times* as fast.

For more information on how the B. F. Goodrich Hi-Torque Brake can help your equipment operate more safely, more dependably, write *B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. CM-29, Troy, Ohio.*

B.F.Goodrich Hi-Torque brakes

Construction 'Round the World . . .

In Canada

Huge Nodwell Transporter crawls over soggy marshland, hauling drilling equipment to Shell Oil's Steen River oil fields in northern Alberta. Wide tracks on rig exert pressure of only 2 psi. This permits moving machines through area during summer months. Previously, equipment haul was limited to winter when marshes were frozen.

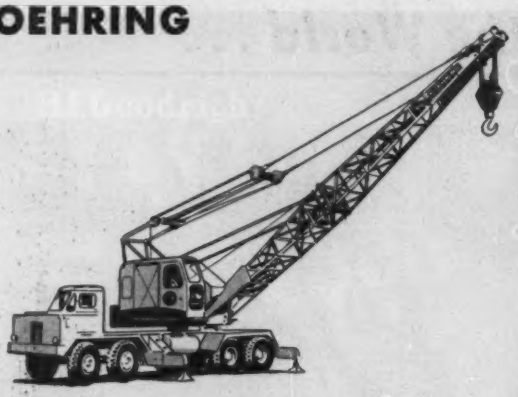
In England

Ruston-Bucyrus power shovel loads rock taken from drift cut through railroad embankment during excavation for 53-mi highway between London and Birmingham. Piers built in cuts will support tracks then remaining embankment will be removed. John Laing and Son's $42-million contract is largest awarded a single firm in Britain.

In India

Part of a host of more than 16,000 Indian laborers supervised by 155 British technicians work on concrete conduit, part of $281-million steel plant in Durgapur. The plant will produce 1,000,000 ingot tons of steel a year. It is being built by a British consortium called Indian Steelworks Construction Co., Ltd.

KOEHRING



Koehring Model 445 Truck Crane (45 tons) . . . available with a Twin Disc 1500 Series Single-Stage Torque Converter.

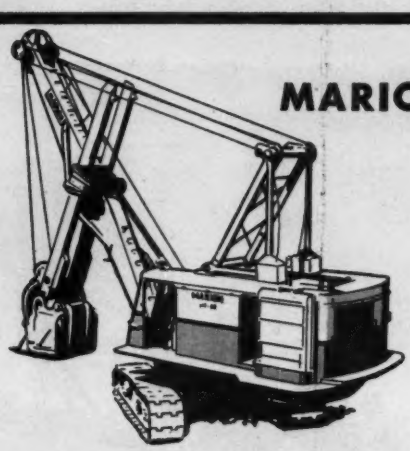
P&H (HARNISCHFEGER)

P & H (Harnischfeger) Model 655B with 1½-yard bucket, available with a Twin Disc 11,500 Series Three-Stage Torque Converter. P & H also offers 3½-yard 1055 Series with Twin Disc 13,800 Series Torque Converter.

MANITOWOC

Manitowoc Model 3600 Shovel with 3-yd. bucket . . . offered with a Twin Disc 10,000 Series or 11,500 Series Three-Stage Torque Converter. Six other Manitowoc Models are available with Twin Disc Three-Stage Torque Converters.

MARION



Marion Type 111-M Shovel with 4-yd. bucket, offered with a Twin Disc 11,500 Series Three-Stage Torque Converter. Six other Marion Models, from ¾ through 3 yds., available with Twin Disc 10,000 Series Three-Stage Torque Converters.

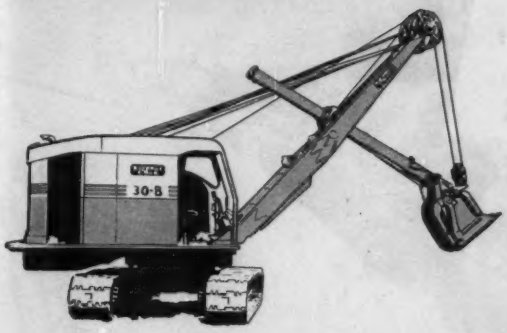
Contractors . . . specify the same that's in your crawler

All of the machines shown here have one thing in common . . . each is offered with an optional Twin Disc Torque Converter, the same make that's in your crawler tractor fleet, whether the machines are yellow, orange or red. Twin Disc Torque Converters have proved their efficiency and dependability in millions of hours of use in Allis-Chalmers, Caterpillar and International crawler tractors!

These leading excavator manufacturers offer Twin Disc Three-Stage or Single-Stage Torque Converters as either standard or optional equipment . . . for seven good, profitable reasons:

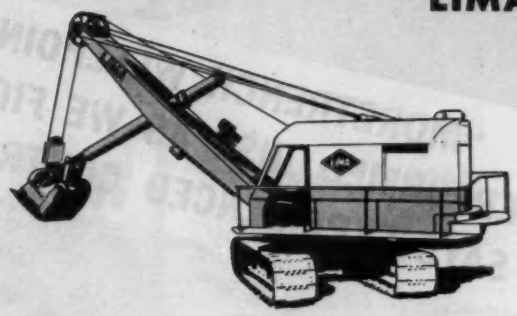
- Twin Disc Torque Converters eliminate lugging and stalling . . . permit engines to operate at maximum speed and efficiency . . . with maximum horsepower always available . . . regardless of load!
- Standardization of Torque Converters reduces maintenance problems . . . slashes spare parts inventories . . . saves time and money.
- Twin Disc Torque Converters cushion out destructive shocks and vibrations normally transmitted by direct-drives . . . for *less parts wear and replacement . . . for greater productivity year in and year out!*
- On a shovel, they deliver up to twice normal torque to the drum—an important advantage in power delivered at slow digging speeds.
- On a crane or clamshell arrangement, they permit safe, accurate control of loads and delicate inching and holding under power.
- They provide an infinite variety of torque ratios . . . automatically and instantaneously . . . according to load demands.

BUCYRUS-ERIE



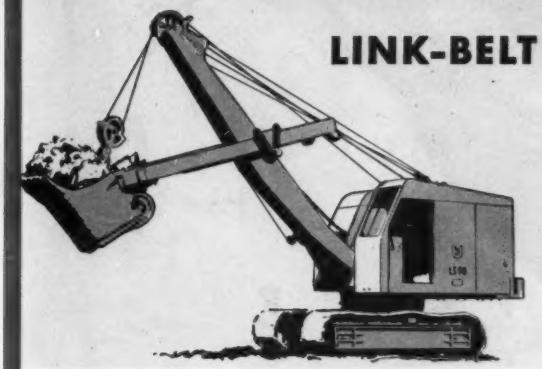
Bucyrus-Erie Model 30-B Shovel with 1-yard bucket . . . available with a Twin Disc 10,000 Series Three-Stage Torque Converter.

LIMA



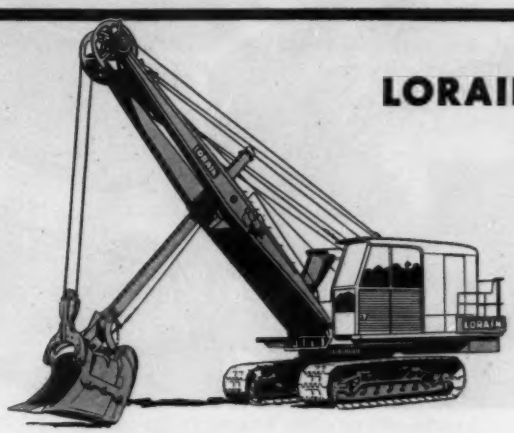
Lima Type 703 Shovel with 1¾-yd. bucket . . . available with a Twin Disc 10,000 Series Three-Stage Torque Converter, which is also offered on Lima Type 803 2½-yd. Shovel. Other Lima products offer Twin Disc Torque Converters and PTO's

LINK-BELT



Link-Belt Speeder Model 98 with 1-yd. bucket . . . available with a Twin Disc 1500 Series Single-Stage Torque Converter.

LORAIN



Lorain-85A Shovel with 2½-yd. bucket . . . offered with a Twin Disc 10,000 Series Three-Stage Torque Converter. Twin Disc also available on Lorain-26 Model ¾-yard Shovel.

converter tractor!

• They extend cable life, cut cable costs . . . by eliminating sharp impact loads . . . by providing constant line tension without dangerous snapping or jerking.

Twin Disc Torque Converters—three-stage or single-stage, from 30 to 1000 hp—are available from all leading excavator manufacturers. Specify one in your next machine. See for yourself why users throughout industry say: A Twin Disc Torque Converter is the wisest investment you can make when buying heavy-duty machinery.

TWIN DISC CLUTCH COMPANY
Racine, Wisconsin
Hydraulic Division, Rockford, Illinois

TWIN DISC
Torque Converters

While MORETRENCH WELLPOINTS effectively absorb 34′ of water, the contractor excavates 45′ down in fine, silty sand — open cut — to place 96″ diversion pipes — *in the dry.*

This project is part of the Metropolitan District Commission's huge sewage disposal plant for the City of Boston.

Only one pump, pumping on two stages of wellpoints, was needed to keep this deep excavation dry.

Headworks Structure, Chelsea, Mass.
Contractors: Berke Moore Company, Inc., Boston
Consulting Engrs.: Charles A. Maguire & Assoc., Boston
Chief Engr., Const. Div., Metropolitan Dist. Comm.: F. W. Gow

EFFICIENT DEWATERING eliminated the need for sheeting — (sheeting shown was left in place from old sewer contract) — reduced labor, fuel and equipment costs —

Competitive bidding today requires substantial experience. When you're figuring a wet job, call us for a realistic estimate of pumping costs.

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Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington
Canadian Representative: Geo. W. Crothers Limited, Toronto, Ontario
Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

Construction Methods AND EQUIPMENT

FEBRUARY, 1959

VOLUME 41 • NUMBER 2

HENRY T. PEREZ, Editor

Plan for Survival

AT ITS 40TH ANNUAL CONVENTION the Associated General Contractors of America listened to some grim facts of life in the atomic age.

In describing the effects of a missile attack, the Army's Chief of Engineers, Major General E. C. Itschner, warned:

"If a city were hit by a 10-megaton nuclear surface burst, it would take 75,000 men nearly a month just to decontaminate an area 18 mi square sufficiently to permit rescue and rehabilitation work to proceed.

"Decontamination would have to proceed simultaneously with opening the streets. The heavy construction equipment required would be 1,200 power shovels, 1,200 draglines, 2,000 bulldozers, 1,000 trailers, and 7,000 trucks. Five billion gallons of water would be needed in an area where power and water facilities would undoubtedly have been destroyed.

"Multiply this by some 20 or more metropolitan areas that might be hit and require rehabilitation, and you come up with a construction job that staggers the imagination. Construction men, equipment, and know-how would bear an importance to this effort second only to the armed forces."

That the contracting industry recognizes its responsibilities and is preparing to assume them was made plain at the meeting when AGC outlined its new disaster relief plan. Not confined to association members but open to any contractor or equipment owner, "Plan Bulldozer" will be on call to help in both natural and man-made disasters.

Participating contractors are to tell local AGC chapters the equipment, material, and personnel they have available for disaster use. Chapters will furnish appropriate government agencies with records of these resources, which can be called on as needed. They also will maintain administrative staffs to help with proper deployment and use of contractors' facilities.

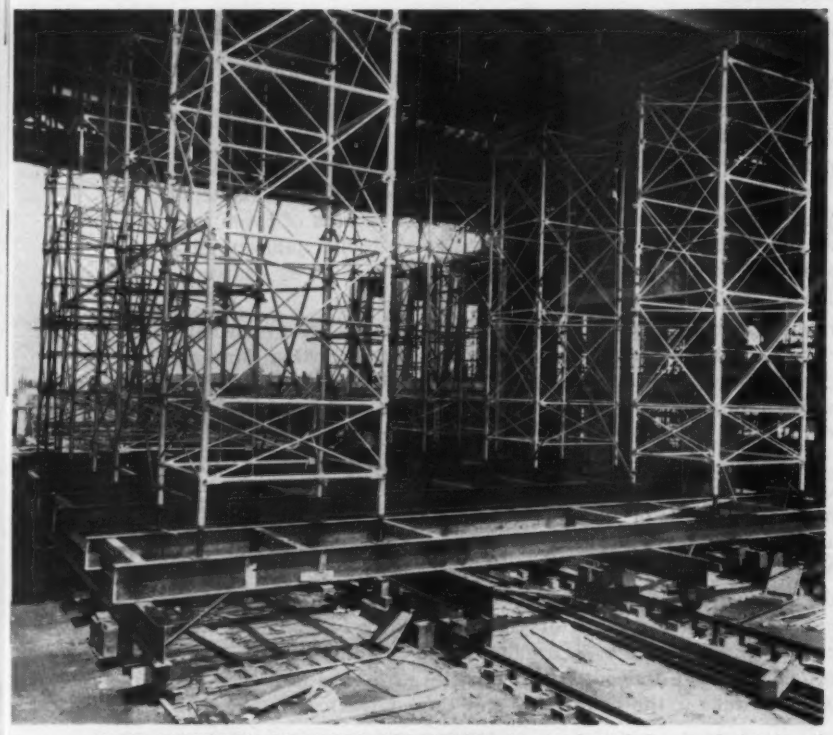
AGC emphasizes that participants under its disaster control plan will go into action only when "public facilities cannot arrest further damage to human or property values or re-establish an orderly physical environment," and then only on "specific request by a public authority engaged in a disaster fight."

One of the factors that has militated against organized disaster relief in the past has been absence of public liability and property damage protection for the contractor. Now, however, low-cost insurance coverage is available for plan participants, so there is no reason why any contractor should not join this worthwhile plan of preparedness.

After all, rivers do flood, tornados do strike, and ships do explode, as at Texas City. Individual contractors are always ready to help their fellow men. How much better to be organized and coordinated to furnish faster, more efficient aid. Indeed, should missiles or bombs fall, such an organization is vital for the country's—and the contractor's—survival.

Tubular Scaffolds Set on Steel Carriage Make Easy-to-Build Form Traveler

Working with a lightweight traveler that requires little mechanical equipment, a contractor rapidly forms and pours roof girders for an airlines terminal building at New York's Idlewild Airport.



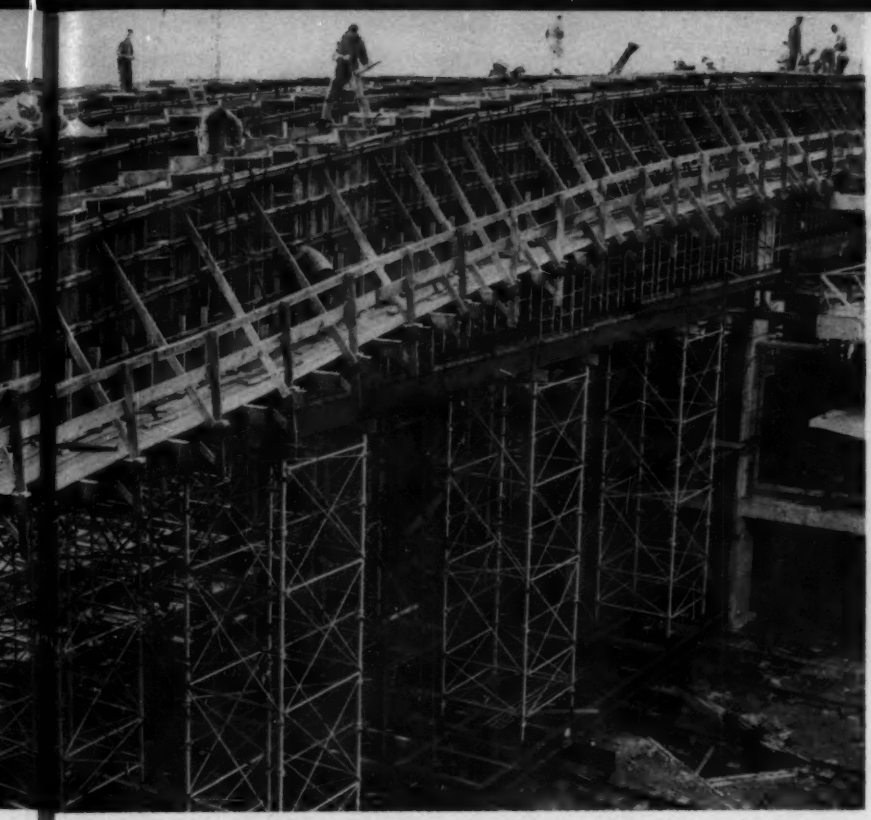
STEEL CARRIAGE SUPPORTS SCAFFOLDS—Structural steel framework fitted with casters moves over rails carrying with it scaffolding towers that hold girder soffit forms.

A FALSEWORK of tubular scaffolds assembled into simple form travelers helps pour curved roof girders for an airlines terminal at New York's Idlewild Airport.

The $16-million Eastern Airlines terminal calls for 16 arched concrete girders that span the main structure. They are 227 ft long, 2 ft 10 in. wide, and 8 ft 8 in. deep. Girders rest on multi-story side structures and rise in a soft curve to a crown 9 ft above the girder ends. A 5-in. reinforced precast roof slab rests on shoulders cast into the bottom of the girders.

Gilbane Building Corp of Providence, R. I., could have poured the girders and roof slab monolithically using built-up falsework to support the forms. But that figured to be expensive.

The contractor operates a more economical method; he pours girders first then returns to pour the roof slab. This permits him to employ lightweight travelers that do not require much in the way of mechanical equipment, yet carry the required load and maintain good production.



SCAFFOLDS SUPPORT GIRDER FORMS—Patent Scaffolding's heavy duty 3-in. tubes built up into 6x8-ft towers, 22 ft high carry soffit forms for roof's arched concrete girders.

Gilbane has four travelers on the job. They carry only the soffit forms. Side forms are built up separately for each girder. Thus, the travelers need lower the soffit forms only a few inches to move from place to place.

Travelers ride on rails 13 ft 4 in. apart, placed and shimmed over timber blocks set on 6-in. centers over existing pile caps. Designed and erected by Gilbane with Chesebro-Whitman, subsidiary of Patent Scaffolding Co., each of the four travelers is built up as a two-part unit: a structural steel carriage that rides on casters, and four tubular scaffold towers set on each carriage to carry forms.

The structural steel carriage consists of two rectangular frames that measure 22x44 ft and are built up of 8-ft sections of 16WF40's and fitted with casters. Built over the frame is a second structural steel frame of eight 16WF40's, 44 ft long, spaced 4 ft apart, and stiffened with timber 3x12's, steel rods, and turnbuckles. Connections are bolted to permit easy disassembly. (Timber blocks are put under the carriage during a pour to take the load off the casters.)

Positioned over each carriage are four 6x8-ft, 22-ft-high tubular steel scaffolding towers fitted with adjustable legs. These towers are fabricated from Patent's heavy duty 3-in. steel tubes. Adjustable legs serve as screw jacks with 9½-in. rises. Towers are braced diagonally with lengths of steel scaffolding tubing.

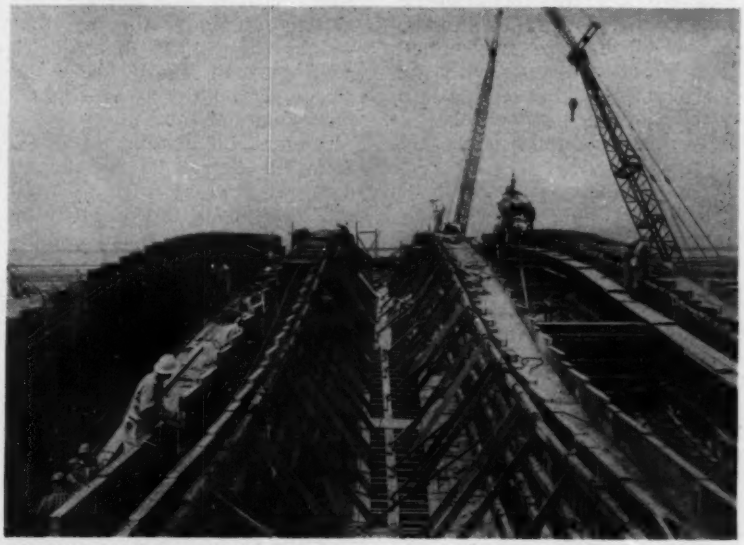
Two lengths of 8B25.5 steel beams cross transversly over the top of each tower to seat eight 40-ft, 18WF50 stringers. Connections here are made with U-bolts. Built up over the top of the scaffold towers is a framework fabricated to the arch.

This is made up of a number of 2-ft ladder frame scaffolds set over the upper structural framework. At the top these units are fitted with U-heads that can be adjusted to meet the specified curve of the arch soffits less the space required for the forms. Heads are bridged with 4x10-in. timber joists over which the contractor nails tongue-in-groove sheeting to serve as the soffit form. The form extends from the outside of one girder to the outside of the adjacent girder to double as a work platform.

Side forms then are placed. They are job-fabricated plywood form panels, shaped to fit over the soffit forms. Concrete is placed by crane and bottom dump bucket.

To decenter the soffit forms after the concrete is cured, the side form panels are released from the soffit form, and the legs of the scaffolding towers are retracted, lowering the soffit form several inches. Side forms later are removed by crane and placed in the new position.

For Gilbane, Jack Lucy is project superintendent, and Jack Tracey, concrete superintendent. F. A. Davidson, Jr., vice president and chief engineer of Chesebro-Whitman, collaborated with Gilbane engineers on the design.



SOFFIT FORMS SUPPORT SIDE FORMS—Girder side form panels rest on soffit forms. They are removed and reset after traveler carries soffit forms to position for next pour.

Double-Bowl Scrapers Get

R. G. LeTourneau's new scraper includes two innovations—double bowls and an electric system that powers all eight wheels. Two of these rigs now are working on a Dallas road job. Downtime is still high, the contractor reports, but the drive system "is the best yet."

R. G. LeTOURNEAU'S double-bowled, electric-drive scrapers—each capable of digging 50-ton loads without pusher assistance—are now undergoing their baptism of fire.

Two of the giant earthmovers are working on a rental basis for a joint venture of Ben Sira & Co. and Whittle Construction Co., both of Dallas, who are supplying 750,000 yd of fill for Dallas' Stemmons Expressway project. The two scrapers have been on the job about two months.

No Pusher Needed

"There are still bugs to be ironed out," says Ralph Whittle, sponsor of the job. "We've had quite a bit of trouble with the electric motors that are geared to the rims of each wheel. But they are getting more reliable all the time.

"One thing is sure—the drive principal is the best to come along. These units definitely are self-loading, and they are the only scrapers on the market that you can say that about."

Adds Whittle's earthmoving foreman, Tom Garwitz: "These are the most powerful machines I've ever seen. It's practically impossible to stick one."

Each two-bucket scraper is powered by a 600-hp Cummins diesel engine that drives ac and dc generators. The ac generator supplies electric motors that power the bowl, apron, and tailgate; the dc generator furnishes power to individual motors that are geared directly to the rims of all eight drive wheels.

The fact that every wheel is a drive wheel makes the scrapers self-loading. The bowls load one at a time. As the front bucket picks up its payload, the empty rear bucket serves as a pusher. As the rear bucket loads, the increased traction of the full front bucket pulls it cleanly out of the cut. The rear bucket loads slightly faster than the front one.

On the Dallas job, each scraper is averaging about 35 yd a trip. And this is in tough, wet, river-bottom gumbo and clay that weighs about 3,240 lb a yd. To pick up their 35-yd loads, the scrapers are in the cut for slightly more than one minute.

Round-trip hauling distances from the borrow pit to the fill area range from 6,000 to 7,000 ft. Traveling at speeds up to 20 mph, the LeTourneau earthmovers average 5.64 pay cycles per hr. The rigs were at their best during a nine-day test recently when they worked two 8-hr shifts a day and delivered more than 35,000 yd.

Turning A Problem

Turning the big rigs around is something of a problem. The 74-ft long scrapers swivel at two places—after the tractor and between the bowls—but they still need about 60 ft in which to turn.

According to Whittle, experienced scraper operators have little difficulty learning to handle the new machines. Some operators claim that they actually are easier to control than conventional scrapers. The LeTourneau machines are operated entirely from a push-button console located in the operator's compartment. Controls include a diesel throttle handle; a steering button and potentiometer; a brake handle; and individual buttons for the blade, apron, and tailgate of each bucket.

"At the very least, each of these rigs is replacing two conventional scrapers," says Whittle. They load quickly, and they are very fast and accurate spreaders. And you've got to remember that they also are eliminating the extra scraper operator and the need for pushers."

Two Other Giants

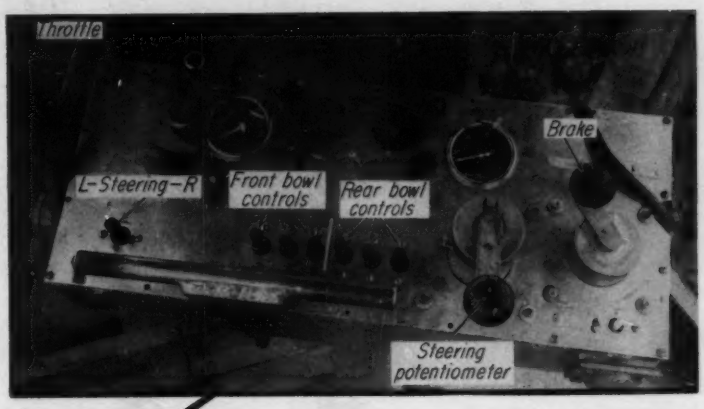
R. G. LeTourneau re-entered the earthmoving equipment field late last year after a five-year absence. The firm also has two other giant-size scrapers under development. One rig is a single-bowl scraper with a capacity of 70 tons. The other is a rig similiar in design to the Whittle machines but with two 600-hp Cummins engines and two bowls capable of loading a total of 130 tons. Both rigs incorporate Le Tourneau's electric wheel drive principle.

First on-the-Job Test

BIG PAYLOAD—Electric-drive scrapers on Dallas road job haul 35-yd loads at 20 mph.

EASY TO RUN—From console, operator controls throttle, buckets, and brakes.

TWO TURNING POINTS—Although the 74-ft-long scraper swivels after the tractor and between the bowls, it still takes at least 60 ft to turn around. Experienced operators report they have little difficulty in backing them up at relatively high speeds.



STEAM UP—Barge-mounted rig drives 18-in. pipe pile inside cofferdam on bridge job near Washington, D. C. Sling holds hammer at batter angle; timber templet guides pile.

How to Drive Piles On Batter Without Leads

No leads are necessary —even for battered piles—when you guide the pile with a templet, hold the hammer at proper angle with a sling, and keep the hammer from sliding off with a skirt fitted on top of the pile.

DRIVING BATTERED PILES without leads saves a lot of trouble. The pile-driving crew doesn't have to fuss around tilting the leads to the proper angle to guide the piles.

But how do you keep the pile in proper position during driving? Arundel Corp. of Baltimore, Md., worked out a simple but effective answer on a bridge foundation job near Washington, D.C.

They locate each pile by placing it in a timber templet mounted at the top of the cofferdams enclosing the piers. Then they carefully set the tip of the pile at the correct spot on the river bottom. Weight of the hammer alone is enough to sink the tip several feet into the soft mud,

insuring that the pile will start in the right direction.

To keep the pile at the proper batter during driving, a sling holds the hammer at the desired angle. An extra holding line supplements the main holding lines attached to a block at the top of the hammer. The sling connects to another block attached to the bottom of the hammer. Changing the length of the sling tilts the hammer to the required angle and keeps it there during driving.

As a further precaution Arundel built a steel-plate skirt onto the bottom of the hammer. The skirt fits over the top of the piles so that the hammer cannot slip off. In addition, another plate attached to the driving head extends inside the collar of the pile and insures a snug fit.

The job involves placing cofferdams, driving foundation piles, and concreting piers for the Woodrow Wilson Memorial Bridge. The 5,900-ft-long welded plate girder structure will cross the Potomac River between Alexandria, Va., and Washington, D. C., at Jones Point. The bridge includes a 227-ft bascule span at the center of the channel for the passage of large vessels. It will be an important link in the projected circumferential highway that will skirt metropolitan Washington.

Arundel holds the contract for the construction of the 10 main piers. Eight of these piers are in the river. They require cofferdams so that concrete for pier footings and columns can be placed in the dry. The cofferdams vary in size. The larger ones for the bascule piers measure 39x120 ft. The others are 20x 94 ft.

First the contractor dredged the top layer of soft muck from the river bottom at each cofferdam site. Then they drove 12 temporary piles to support the prefabricated bracing frame that serves as a templet for the sheet piles during driving.

Four barge-mounted rigs are on hand to excavate, handle the steel frames, and drive piles. They drove L. B. Foster ZB-27 sheet piling for the cofferdams 35 ft into the river bottom, to a depth of 80 ft below the surface of the water.

Arundel fabricated the three courses of steel beams that go into each bracing frame at their Baltimore shipyard. They transported the truss sections to the site for completion of the fabrication. Then posts and bracing were added at a yard on shore.

Barges carried the frames out to the cofferdams for placement. There are two bracing frames for each cofferdam. The sections weigh 60 tons. A complete frame for one cofferdam would be too much for the cranes to handle.

The contractor placed several 12-in. channels between the tem-

PLACING FRAME—Crane positions 60-ton frame that braces interior of cofferdam and serves as templet for sheet piling. Twelve temporary pipe piles connected by 12-in. channel bracing support the frames. Each cofferdam takes two of the 28-ft-high units.

porary supporting piles at elevation minus 25 to hold the bracing frames. Top of the frame extends out of the water about 3 ft. After completion of the preliminary work, it takes Arundel only one week to drive the sheet piling and complete a cofferdam.

The number of foundation piles in each cofferdam varies. The total is close to 750, with the bascule piers taking the lion's share with 150 piles each. The 18-in.-dia pipe piles come in 40 ft lengths, but Arundel welds three of the sections into a 120-ft length before driving them. Final depth of the piles is seldom over 120 ft, so field splicing of piles is reduced to a minimum.

A Lincoln Electric Squirt Welder makes a butt weld in the pipe pile in just 4½ minutes at most. The lengths of pipe pile are laid on rollers that turn them at a speed of one revolution every 2 min. It takes two passes to complete a weld in the ½-in.-thick sections, just one pass for the thinner ⅜-in. size.

The welding unit is semi-automatic. The operator guides the submerged arc welding head along the seam as the rollers turn the pile. The head swivels back and forth on the end of a short manually operated boom. A thin ribbon of copper-plated welding bead spins from a revolving spool and automatically feeds the gun in the proper amount. Flux pours from another outlet on the gun at the same time so that the weld will not become oxidized.

Welded Joints

A steel band backs up the joint inside the pipe to prevent the welder from burning through the ¼-in. land. The back-up collar is about ⅛-in. thick. A 30-deg bevel at the butt makes a 60-deg included angle at the joint for the gun to fill with weld material.

The unit normally operates at 32 volts. Current requirements vary with the size of pipe. For ½-in. pipe, the welder operates at 600 amps.

Arundel hasn't placed concrete for any of the piers yet. The first pour, a 9-ft-thick tremie seal to close off the bottom of the cofferdam, will take place this month. Then pumps will dewater the cofferdam.

An 18x89-ft rectangular footing will go on top of the tremie seal. There will be just enough room along the sides of the 20x94-ft cofferdams to form the 6-ft-high lift. Four 6x8-ft rectangular columns capped by a 15-ft-deep header beam will extend above the footing to just above high water level. The header beam in turn will carry the four 5½-ft-dia pier columns that will hold the welded plate girders spanning between piers.

The foundation phase of construction is scheduled for completion by the end of this year.

Superintendent on the job for Arundel is Taylor Newman. Project manager is Vic Hertzlett. The project is being carried out under the supervision of the Bureau of Public Roads. Resident engineer is H. B. Herring.

WELDING JOINTS—A Lincoln Electric arc welder joins 40-ft sections of pipe pile into 120-ft lengths in yard on shore. Piles lay on rollers that turn them one revolution every two minutes. Weld requires two passes. Unit eliminates field splicing of piles.

DRILL JUMBO—Company-designed jumbo mounts 10 Gardner-Denver hydraulic jibs and drills on three levels. Lower platform raises so muck cars and locomotive can pass through.

Tunnel Driving Crew Claims World Record

A California contractor excavated and lined 1,363 ft of 18 x 24-ft rock tunnel in 26 days to set what may be a new world record.

THE LATEST CLAIM of a world tunnel driving record comes from the Utah Construction Co. of San Francisco, Calif.

On a current rock tunnel job in Utah they excavated and lined 1,363 ft of 18x24-ft tunnel in 26 working days. Then, for the next eight months they averaged 45½ ft per day in spite of unexpected rock formations. They expect to finish the job at least a year early.

You can make up your own mind whether or not that is a world tunneling record. But record or not, it adds up to an outstanding job of tunneling.

The job is an 18,000-ft-long ore haulage tunnel at Bingham Canyon, Utah. It will be part of an $11-million improvement to a mining installation belonging to the Kennecott Copper Corp. Utah is driving the large-bore tunnel with equipment designed to utilize fully the size of the bore. Key machines include a company-designed drill jumbo that mounts 10 Gardner-Denver hydraulic jibs and drills and allows drilling on three levels simultaneously, a Conway Model 100-1 mucker that excavates 150 yd per hr, 8-yd Moran mine cars, 7-yd Worthington-Ransome concrete agitators, 10-ton Greensbrugh electric locomotives, and a 60-ft-long Blaw-Knox concrete form jumbo.

Excavation

The crew normally pulls a 12-ft round at the heading, with from 50 to 85 holes per round, depending on the nature of the rock. An 85-hole round takes about an hour to drill. Starter bits generally are 1⅞ in. dia, and a 1¾-in. bit completes the hole.

The holes are wired for 11 delays, beginning at the Vee cut in the center. The explosive is Atlas 40% powder.

A 30-hp electric hoist mounted on the rear of the drill jumbo permits overhead switching of empty muck cars off the train. The jumbo travels on wide-spaced rails and is built so the center section of the lower deck can be raised. These features allow excavating equipment to pass through it to the muck pile.

During the mucking cycle, the drill jumbo remains about 200 ft from the heading. A nine-car train of empties is parked behind it. The 10-ton battery locomotive, with one empty car ahead and another behind, moves up to the Conway mucker at the heading. It leaves the forward car to be loaded and backs the other empty up to where the jumbo hoist can lift it clear of the track.

When the muck car in the heading is loaded, the locomotive pulls it back through the jumbo and picks up another car from the train of empties. At the same time the drill jumbo lowers its empty car to the track so the locomotive can push it to the heading. This cycle repeats until the nine-car train is loaded for dumping outside the tunnel.

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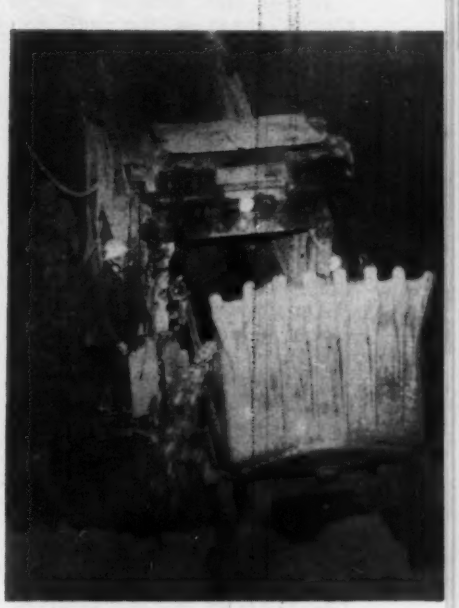


MUCKING—Conway Model 100-1 mucker excavates 150 yd per hr into 8-yd mine cars.

Concrete Guns, Conveyors Move Mix into Forms

STAGE 1—Rail-mounted mixer hauls 7 yd of concrete from batch plant into tunnel. Conveyor elevates it to overhead Pressweld gun.

STAGE 2—At forward side of Pressweld gun, concrete moves through hole in hopper down chute to second gun.

Concreting

A 4-ft high concrete curb is poured ahead of the wall and arch. This curb is formed around the bottom of the steel sets, and later helps in the alignment of the arch forms.

Normally Utah pours the arch about 1,200 ft back from the heading so as to relieve congestion in that area. To speed concrete handling they installed a 30-in. conveyor, hinged at the top end to the form jumbo.

Agitators, mounted on flat cars, carry concrete from the Noble plant just outside the portal to the conveyor at the forms. The agitators have 30-hp electric motors that rotate the drums during loading and again for a few minutes before unloading.

The agitators discharge onto the conveyor which elevates the concrete into a 4-yd hopper over an overhead Pressweld gun. The gun, handling a yard of concrete at a time, forces it back at 100 lb pressure through a 6-in. overhead line into the arch forms. These forms, mounted on a rail-riding jumbo, permit regular traffic to pass along the center of the bore. The conveyor can be raised enough to clear this traffic.

Telescopic legs under the form jumbo permit it to be raised or lowered to permit moving. During a pour the sides of the jumbo sit on timber blocking and are pinned against the curb with 1-in. anchor bolts, 12 in. long. These bolts fit into threaded inserts that were cast into the curb at 5-ft centers.

Four 20-ton Blackhawk hydraulic jacks on each side position the forms vertically. Three-in.-dia screw spreaders fit into collars on the forms to hold the forms latterly at the springline.

Portable Viber vibrators consolidate the concrete as it is forced into the forms. The vibrators are clamped to a series of angle iron brackets welded to the jumbo.

Utah prepares a 5½-yd mix designed to form 3,000-lb concrete at 28 days. Maximum size of aggregate is 1½ in. A minimum 4 in. of cover goes over the arch steel and in some places the concrete is up to 24 in. thick.

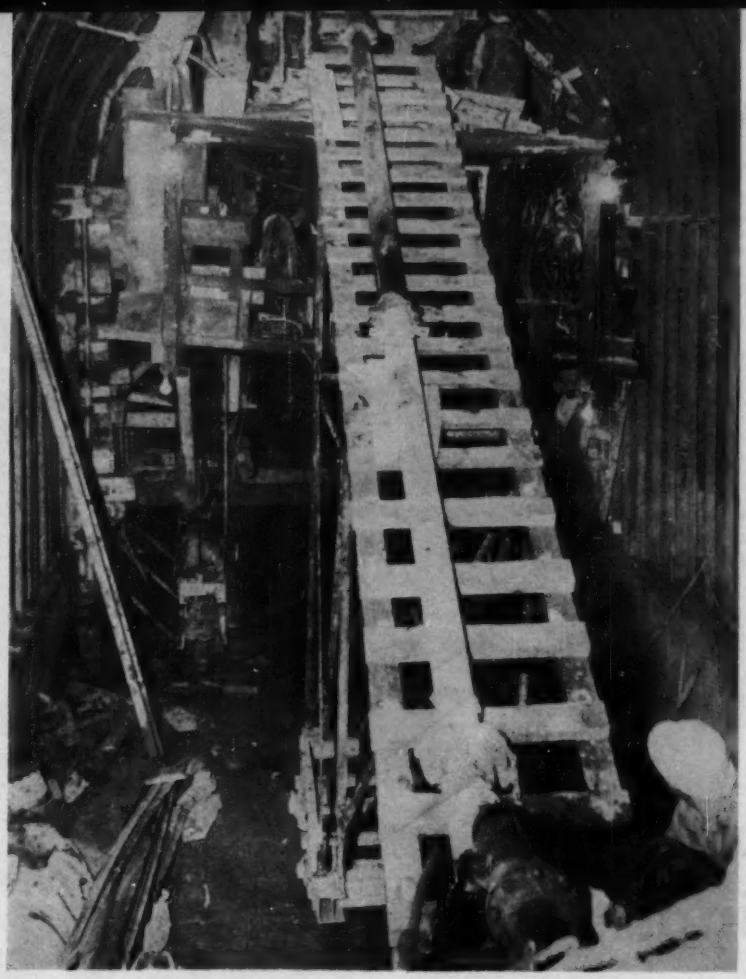
Two California switches, one ahead and one behind the form jumbo, aid traffic movement through the concrete operation.

Complications

Utah crews had to slow down considerably just short of the 14,000 ft point when they passed from quartzite rock into a fault zone across the path of the tunnel.

The rock in this zone contained feldspar crystals that had changed into a kaolin clay. The result was material that crumbled on exposure to air.

The crews first tried to hold back the sides of the tunnel with heavy steel rail spreaders. But this didn't work. The ground moved in and squeezed in the arch sets as much as 6 in. on each side, bowing the spreaders 8 in. at the same time.



STAGE 3—Second gun forces concrete up into arch forms. While tunnel passed through fault zone, special forms on drill jumbo allow crews to pour right up to heading.

Instead of a rearrangement of the normal concrete system, Utah decided to add a relay to the short arch form. They brought in a second Pressweld gun and stationed it ahead of the first one.

They cut a hole in the hopper of the overhead No. 1 gun and allowed the concrete to slide down a chute into No. 2 gun, which was mounted on a flatcar. It was the No. 2 gun that fed the concrete into the improvised short form.

Progress was limited to about 4 ft at a time. Drilling, shooting, and steel setting took a full day. Sometimes it took three days to advance 20 ft. Then the drill had to remain idle for two days while the concrete was placed.

Cost of lining the tunnel will be reduced by using timber for the last 1,700 ft, with the final 500 ft to be untreated timber.

During normal operations 160 men are on the job. Drilling and mucking is on a three-shift basis; concrete is on a one-shift day. Original completion date was mid-1960 but Utah figures to finish by June, 1959.

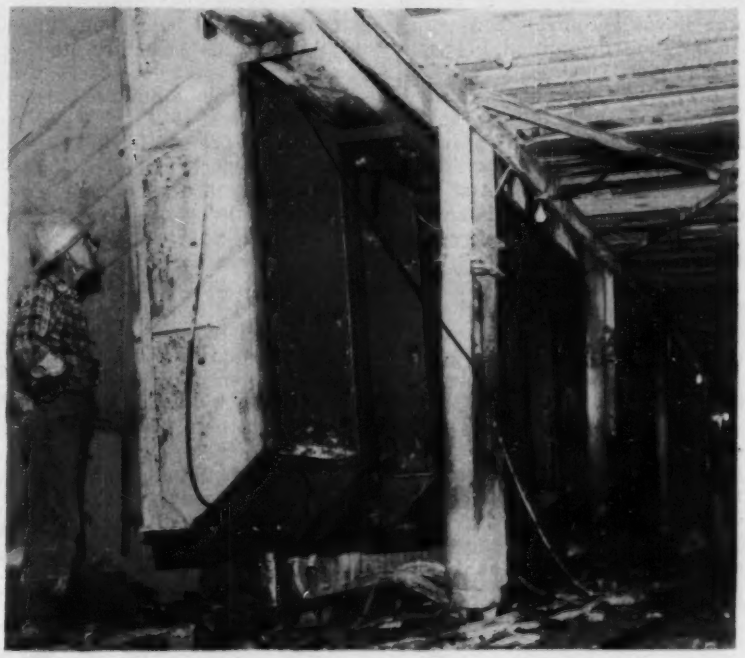
P. C. Guinn is project manager for Utah. M. F. Finlay is superintendent. C. A. Mason is project engineer and concrete superintendent.

So they had to erect heavy timber breastwork at the heading to keep it intact and rework the area behind. They started by pouring an invert slab. This meant excavating in 5-ft sections under the curbing and backfilling with 2½ ft of concrete reinforced with 300 lb per lin ft of No. 10 rebars.

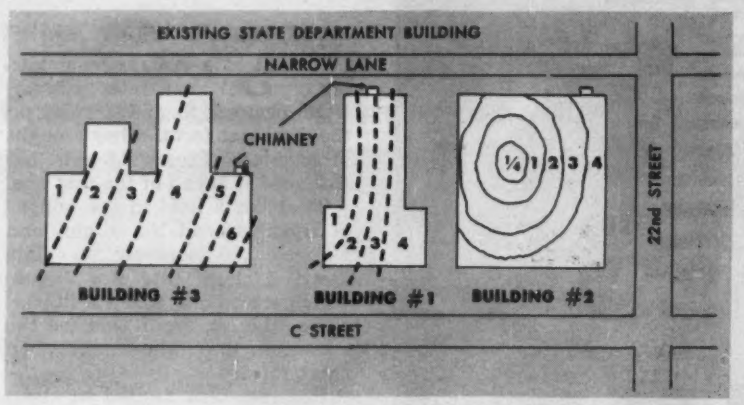
They poured a section of arch as close to the heading as possible. They made subsequent pours moving away from the heading.

For these arch sections Utah engineers designed a short arch form to fit onto the drill jumbo. This allowed them to pour right up to the face. The form was constructed of steel arch panels and plywood wall panels.

Back pouring at this stage went slowly. The improvised short arch form, only 18 ft long, held 56 yd of concrete compared with over 200 yd for the 60-ft Blaw-Knox rig. Also they had to leave the forms in place longer to be sure the concrete had reached sufficient strength.



REGULAR FORM—Normal pours are made with this 60-ft long Blaw-Knox form jumbo that holds over 200 yd of concrete. Jumbo moves on rails, is jacked and pinned into place.



FIRING PATTERN—Building No. 3 collapses (right). Numbers on diagram (above) show sequence of delays for each building.

Only a daring and experienced demolition man would risk dynamiting an 8-story downtown building. A Baltimore outfit did it three times on a single job—with perfect success.

Well-Placed Dynamite Neatly Drops Three Buildings

SKILLFUL PLACING of dynamite charges and a clever pattern of delays resulted in almost unbelievable control of a series of building demolition blasts in Washington, D. C.

Burnbrae, Inc., of Baltimore, demolished three 8-story apartment buildings in the heart of downtown Washington with one blast for each building. And they didn't even scratch a window on other big buildings just across the street.

The secret of this amazing control was to set off small charges at key structural points in the building. With key supports removed, the building's own weight brought it down.

Burnbrae not only neatly felled each building, but they also arranged the delay series so that the floors fell first, pulling the walls in on top of them and leaving a compact, completely shattered pile of debris in the middle of the lot.

Such efficiency resulted in the razing job being completed in 75 days; the estimate had been 120 days. The demolition and clearing cost had been estimated at $150,000. Actual cost was $95,000.

The razing was required for the new State Department Office Building. This structure, to be completed in 1960, replaces the three apartment buildings that were on the site.

The safety record for the blasting was perfect, too. From prior experience, insurance men expected at least one laborer to be seriously injured and several others to receive minor injuries if conventional blasting methods were tried. Not a man was scratched.

The demolition by dynamite of structures in crowded areas is frowned on by some cities; it is illegal in others. But Burnbrae, an experienced dynamite subcontractor headed by John D. Loizeaux, uses a system that holds vibration to less than that of a passing truck and virtually eliminates concussion.

"Placing charges below ground level holds down concussion," says Loizeaux. "Placing them above basement floor level holds down vibration. And firing them in delays controls both."

The Vibration Engineering Co. conducted seismograph recordings of the Washington blasts and backs him up on this. "The recorded vibration effects," says their report, "were many times below that necessary to cause structural damage to even old prestressed plaster, normally the weakest of material."

The three condemned buildings stood along the north side of C Street at 22nd, facing the Atomic Energy Commission Building to the south. To the rear of the three structures, across a narrow alley, was the existing State Department Office Building and its parking lot.

Apartments No. 1 and 2 (numbered in sequence of demolition) were separated by a 21-ft space. Building No. 2 stood at the northwest corner of C and 22nd; building No. 1 in mid-block. About 150 ft separated building No. 1 from No. 3 to the west.

All three structures were reinforced concrete faced with brick and tile. They were about 30 years old. They were stripped of fixtures before blasting began.

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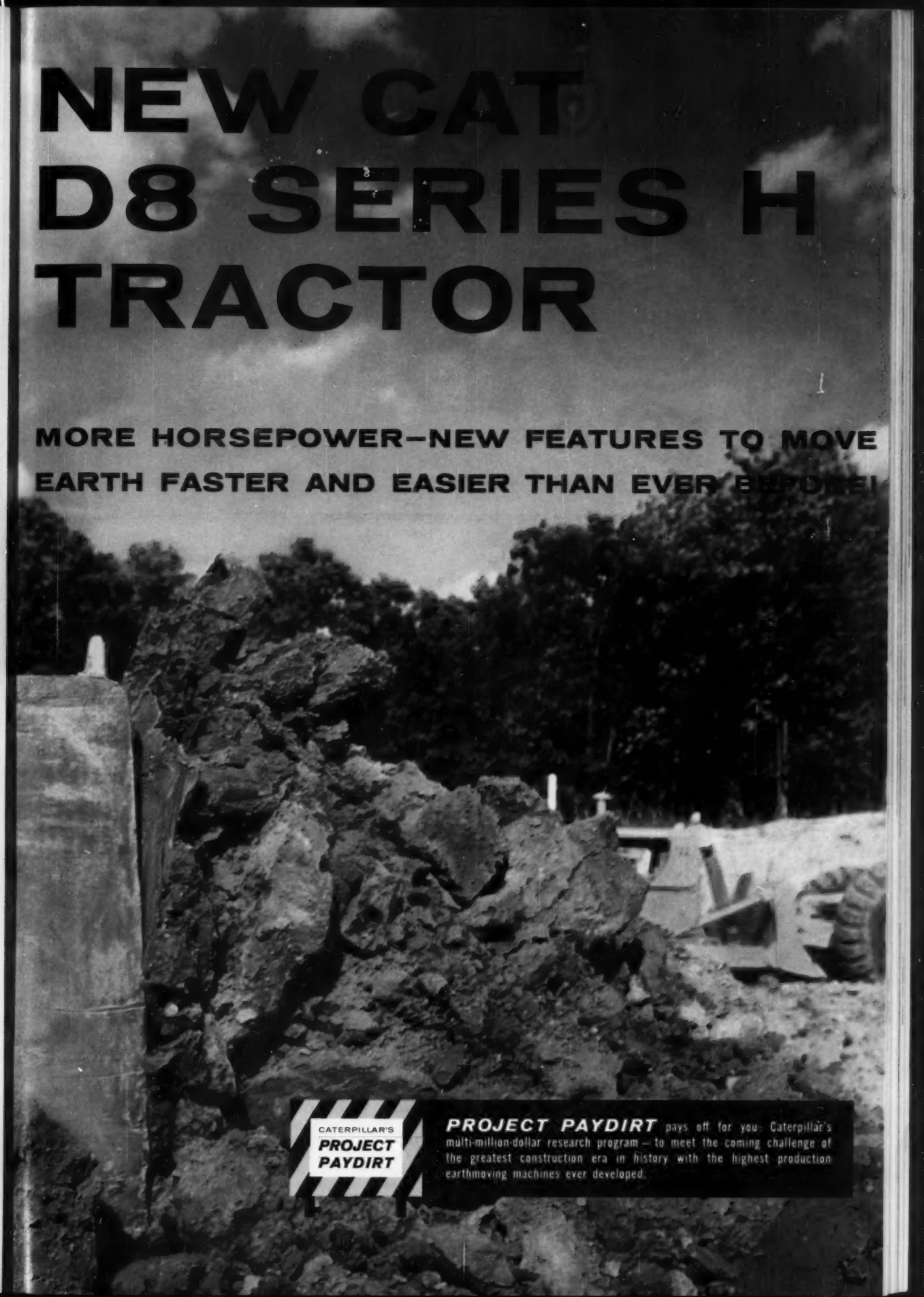
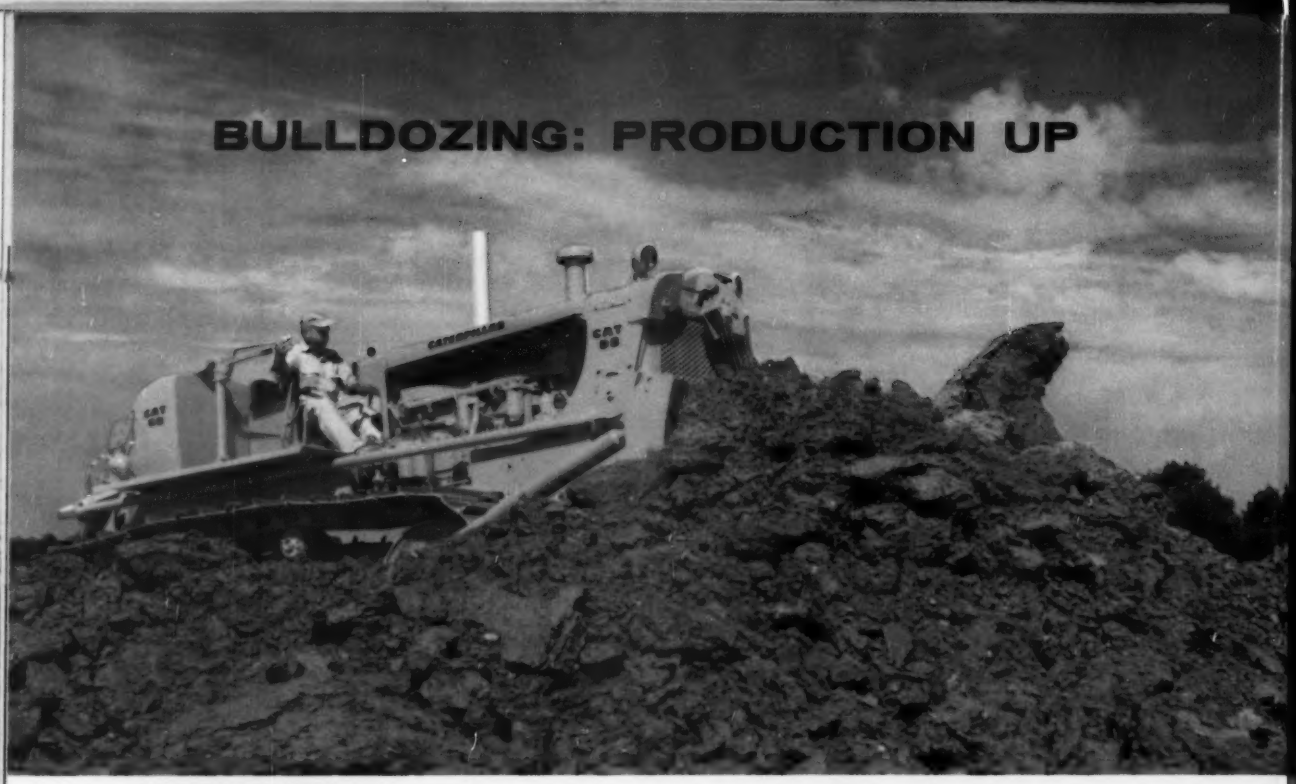

NEW CAT
D8 SERIES H
TRACTOR
MORE HORSEPOWER—NEW FEATURES TO MOVE
EARTH FASTER AND EASIER THAN EVER BEFORE!
CATERPILLAR'S
PROJECT
PAYDIRT
PROJECT PAYDIRT pays off for you. Caterpillar's multi-million-dollar research program—to meet the coming challenge of the greatest construction era in history with the highest production earthmoving machines ever developed.

BULLDOZING: PRODUCTION UP



CATERPILLAR'S *PROJECT PAYDIRT*

FIELD TESTS PROVE GREATLY

The new Caterpillar D8 Series H Tractor is ready *now* to increase its lead as undisputed king in its size class. A major achievement of Caterpillar's all-out research program, "Project Paydirt," the new D8 has been proved through a rigorous field testing program.

The D8 Series H is new in design, appearance and performance. It is bigger, more powerful. It incorporates dramatic new engineering advances. It is easier to operate. It is faster.

On these pages you can see some of the *big* advances the D8 has made. But there are hundreds of other major improvements, too. For example, the transmission, bevel gear and steering clutches have *one* lube system, and it uses SAE 30 engine oil instead of special

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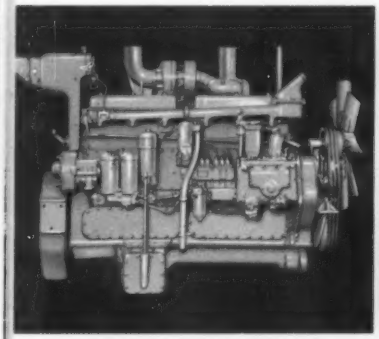
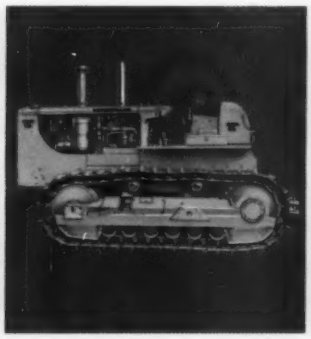
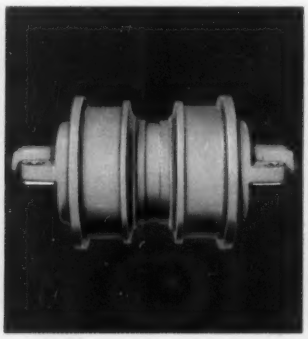


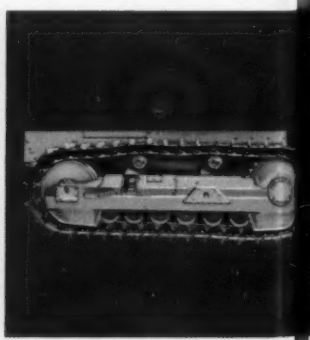
Horsepower increased 18%. The horsepower of the new D8 is up from 191 to 225 at the flywheel, from 155 to 180 at the drawbar. In addition, engine torque rise now is 20%, an increase of one-third. Over-all engine performance has been greatly improved by the addition of a turbocharger.



Size increased. To make effective use of the new horsepower, over-all weight of the tractor has been increased 4,400 lb. to a total of 47,000 lb. At the same time the gauge has been increased to 84 inches, track on ground lengthened to 114 inches, square inches of contact increased to 5,505.



Lifetime lubricated rollers and idlers. That's right — lifetime! In a major research breakthrough, Caterpillar has achieved track and carrier rollers and idlers that never require further lubrication until rebuilding. And service life is hundreds of hours longer than with ordinary rollers.



New, stronger, heavier undercarriage. Every component, such as frames, links, braces, pins, bushings, shoes, has been made stronger by the use of improved materials and heat treat processes to provide longer life. And ground clearance has been increased 50% to almost 20 inches, greatest in the D8 class.

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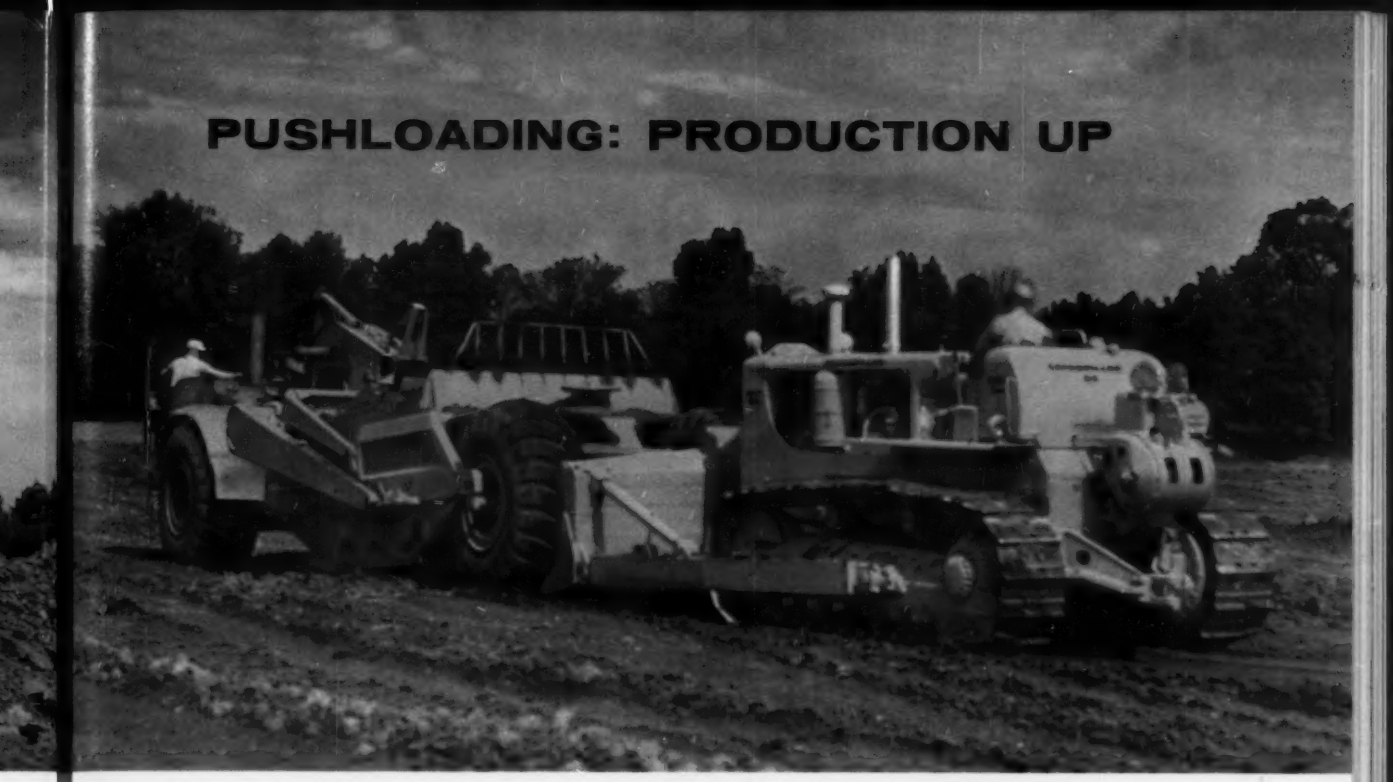


TLYNCREASED PRODUCTION WITH NEW D8

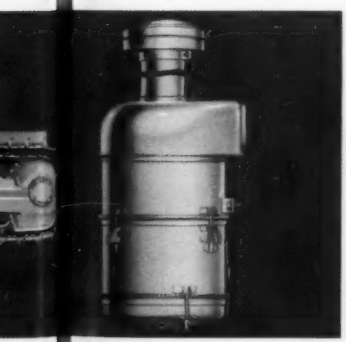
oils for each. In fact, the D8 is the only tractor in its class to have its entire power train pressure lubricated with completely filtered oil. And there are three brand-new, high-output hydraulic controls for the D8—Nos. 143, 165, 176. The list of improvements is impressive. Add them up, and you can see why the new D8 is the most advanced tractor in its size class.

Now—what can the D8 do for you? Here's the answer:

The Series H (available in direct or torque converter drive, according to your requirements) has been thoroughly field tested. A number of the big new tractors have been at work constantly in every kind of material on every kind of job. The statistics developed during these extensive tests prove conclusively that both bulldozing and pushloading production figures are *up*.

This means that you can move dirt faster and easier than ever before with a tractor in this size class. You get higher production, bigger profit—yet the big new D8 Series H has actually proved *more economical* to own and operate!

But find out for yourself. Get the full story from your Caterpillar Dealer, all the eye-opening facts and figures that can only be touched on briefly here. Then *see* this great new machine at work on your operation as soon as possible! You can't afford not to.



Dry-type air cleaner. Here's still another major Caterpillar research development on the new D8—the new dry-type cleaner which removes 99.8% of dirt in the intake air, even under severe operating conditions. The new cleaner can be serviced in 5 minutes, costs a good deal less to use.

Superior operation. Operator visibility is excellent because of higher deck and changed seat position. Console-type controls make operator's job easier. And on torque converter models, standard foot-operated decelerator can override hand throttle—free operator's hands for other controls.

TWO MORE IMPORTANT OPERATOR CONVENIENCES

Higher speed. Completely new, long-life, direct drive transmission provides six speeds forward and six reverse. High speed has been increased to 6.3 MPH forward, 6.4 reverse to reduce cycle time. Operator can shift from any forward gear into a similar reverse gear (or vice versa) by simply moving the forward-reverse lever.

Dependable oil clutch. By contractor and operator demands, the virtually service-free, easy-to-operate oil clutch has been retained in the new D8. Another important Caterpillar exclusive.

CATERPILLAR'S *PROJECT PAYDIRT*

Multi-million-dollar research program pays of for you in every piece of Caterpillar equipmen

The completely new D8 Series H you have just seen is dramatic proof of the power of Project Paydirt to give you the most modern, productive earthmoving equipment in the world. But this new tractor is just part of a continuing story.

Vast research and development facilities, the most extensive in the industry, bring improvement upon improvement to every piece of Caterpillar equipment. LOWBOWL Scrapers have revolutionized scraper design; the exclusive oil clutch has set new standards of long life.

Whether it's a better way to heat treat a bolt head, the Torsionflex Seat for operator comfort, or redesigning a tractor-scraper combination—nothing has been overlooked to increase the efficiency of Caterpillar machines.

Full Line Helps You Increase Production—Here's the line-up that's waiting at your Caterpillar Dealer to help you to more productive earthmoving.

Track-type Tractors—Besides the new D8, there's a full line of other Cat track-type Tractors ranging from the massive D9 (320 HP) to the smallest—the 63 HP D4. A full range of 'dozers (including the amazing Gyrodozer for D7 Tractors), scrapers and rippers expands the working applications of these tractors.

Traxcavators—The three Cat-built Traxcavators can fill your needs for a front-end loader because they're designed from the ground up for that purpose. Bucket capacities range up to 2¼ cu. yd. All Traxcavators can be equipped with the exclusive Side Dump Bucket, or other special buckets teeth, 'dozers or forks.

Wheel-type Tractors—Caterpillar wheel-type Tractors fea ture speed, power, four or two wheel options, plus the ex clusive, matching LOWBOWL Scrapers. These rubber tire combinations have an unequalled record for profitabl earthmoving production.

Motor Graders—The No. 12 and No. 112 Motor Graders both available with Preco Automatic Blade Control tha maintains blade accuracy of ⅛″ in 10′, have the versatilit to solve construction and maintenance grading problem quickly, efficiently and easily.

Your Caterpillar Dealer is ready *now* to supply the fines equipment for earthmoving. He backs what he sells wit dependable parts and service. See him today.

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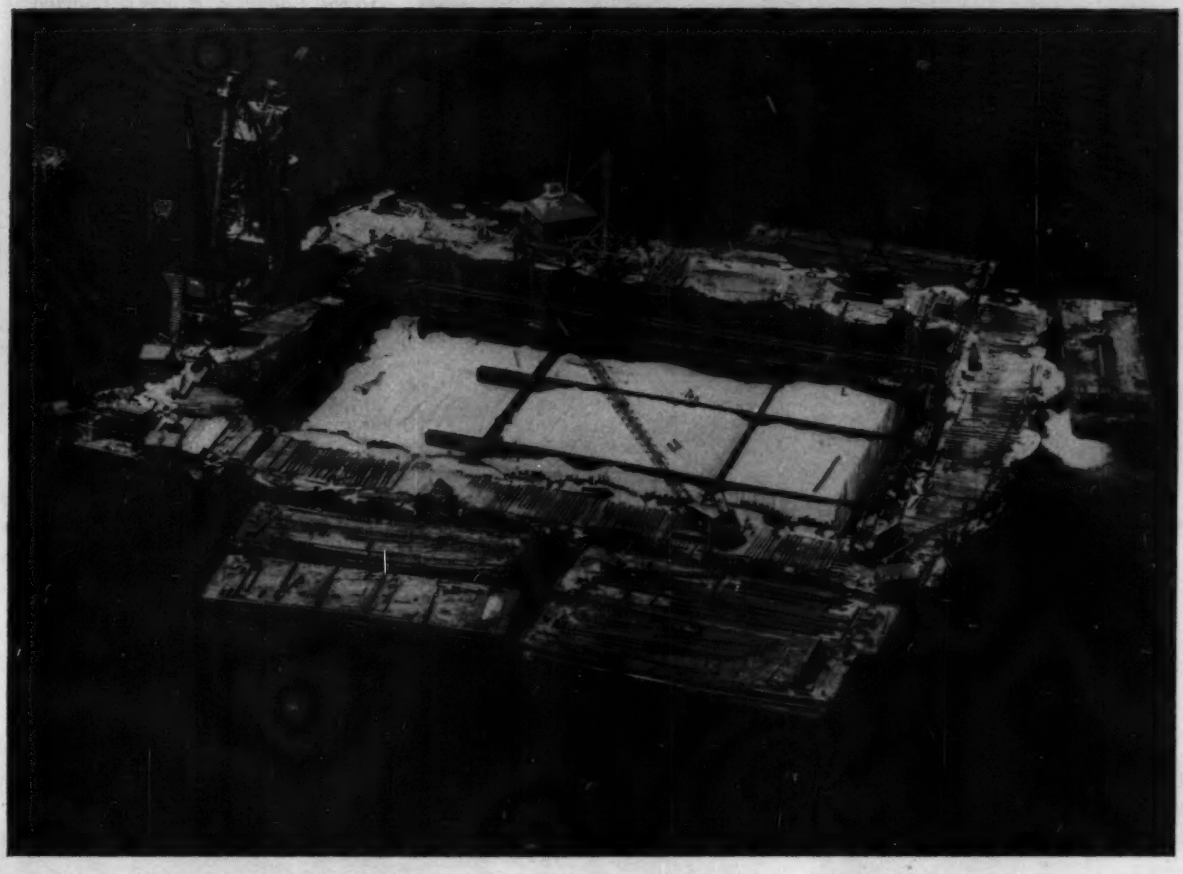
HOW TO HANDLE WET JOBS

Project: Queens Anchorage, Throgs Neck Bridge, New York City
Contractor: Steers-Snare, *a joint venture*
Engineers: Ammann & Whitney



Sinking of huge bridge caisson speeded after wellpoints...

Dewater Man-Made Island 30 ft Below River

In order to sink this giant caisson a cofferdam-enclosed sand island was required. (See photo). Confident that wellpointing would result in a time and money-saving operation, Steers-Snare built the island not up to river level (which was the preliminary plan) but 25 ft below.

• This greatly reduced the yardage of sand fill, thereby eliminating additional excavation later on. However, Griffin engineers were confronted with a difficult dewatering job, since investigations indicated many unusual problems of soil mechanics, hydraulics and stability.

• Solution? A specially designed Griffin wellpoint system which attained absolute control of ground water and uplift pressure and insured the stability of the cofferdam.

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WELL-PLACED DYNAMITE . . . continued from page 98

BUILDING NO. 1

West side of building begins to collapse as delays are fired in sequence from west to east through basement. Structure fell toward the west as contractor had planned.

Floors Collapse

Building No. 1

The first to be demolished, this mid-block building was rectangular in floor plan, 30x110 ft, with the long dimension perpendicular to the sidewalk. It was supported in the basement by 38 columns, each 18 in. square and each containing nine vertical 1¼-in. reinforcing rods.

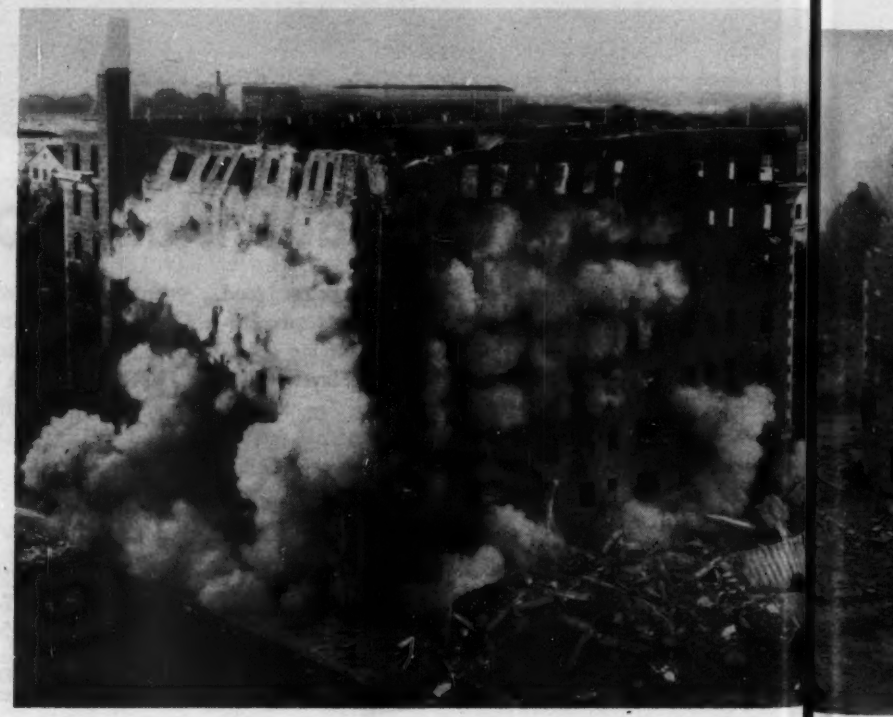
The basement was partitioned with several tile walls, and Burnbrae knocked these out with mauls prior to drilling. "There would have been nothing worse than blowing the columns, then having the building stand on those partitions," explains Loizeaux.

A 500-gal hydraulic-powered tree sprayer, spraying a fine water screen directly on the hole during drilling, effectively laid the dust. For lighting, they brought in a portable 2,500-watt Homelite generator, after gas lanterns proved too fragile.

Gardner-Denver rock drills with carbide insert bits, powered by a Davey compressor, handled the drilling. They drilled six 1½-in. holes in a vertical line in each of the 38 columns. When the drill bit hit steel, the crews stopped

BUILDING NO. 2

Penthouse sags as instantaneous charges near center of basement go off, causing floors to drop and roof to buckle (above). Plummeting floors whip walls inward (right). The apparent smoke is actually dust from crumbling masonry. Building collapses into neat pile of thoroughly shattered debris (extreme right). Cable that was to pull down chimney slipped during first delay. Truck later pulled down chimney.



as Blast Cuts Columns

drilling in that hole and marked the hole for later burning.

The wall columns were drilled for only two charges. This provided a sort of "hinge" effect rather than a complete cut, so that the columns fell inward.

Drilling in Building No. 1 began at 8 am on a Sunday and finished at 1:45 am on Monday. Crews loaded the holes immediately because the State Department parking lot across the alley had to be ready for use that same morning.

All holes were loaded with half a pound of 40% Du Pont gelatin. The wiring consisted of eight series wired in parallel, with four or five columns in each series.

Twenty-seven of the columns were loaded with Du Pont regular delay electric caps, ranging through the entire Du Pont standard delay periods from first to tenth. The remaining column charges were loaded with instantaneous caps and Du Pont millisecond delay caps ranging from MS-25 to MS-100.

The ticklish business of felling sequence and debris control made it imperative that each charge fire as planned. Burnbrae checked each cap as it was loaded with a Du Pont blasting galvanometer. They checked the caps again after they were wired, and finally they double-checked all series just prior to shooting.

At 5:30 am, with police patrolling the area and with the fire department standing by, Loizeaux triggered the sequence with Burnbrae's Du Pont CD-48-1 blasting machine. The total sequence time was 11 seconds from the time of firing the 10 instantaneous and 20 MS charges through the eight delay periods that followed.

Burnbrae planned to collapse the structure inward on itself and somewhat westward away from the building 21 ft to the east. With this in mind they fired first the light wall column charges and the charges in the key supporting columns on the west side of the building. Then in successive delay periods the blast was "walked" eastward through the basement. The chimney was cabled to the top floor so it would fall inwards.

The plan worked perfectly. The building collapsed in a heap and the adjacent apartment building was not touched.

Building No. 2

Demolished six days later, this structure was rectangular, 105x 130 ft, with a small courtyard in front and a chimney at the rear. The court was no problem, but the chimney threatened the State Department building to the rear. This chimney, too, was cabled to the top floor to fall inwards.

The basement contained 87 columns plus the wall columns. There were no interior partitions. The columns were round, 24 in. dia, reinforced with 9 vertical 1¼-in. rods surrounded by a heavy reinforcing spiral.

Burnbrae drilled four holes in vertical alignment in each column. They found it rough going because of the large amount of burning required.

They drilled just one hole in the wall columns to provide the hinging effect. They also reduced the charges in these columns to prevent complete cutting. They figured to collapse this building inward, with the walls hinging from the beginning of the firing sequence, and thus pull the south and east walls away from C and 22nd Streets.

They could not load the chimney because its base was directly adjacent to a stairwell to the furnace room. This meant that there was nothing to prevent chimney debris from escaping northward toward the State Department structure. So they had to depend on the cable to pull the chimney in.

They put instantaneous charges in the wall columns only. In a group of columns off-center to the northwest they put MS-25 to MS-100 charges. The intention was to contain the center of collapse within the building limits and at the same time to pull it away from the two streets.

The first delay was concentric around the MS group. The second delay surrounded the first and also took out most of the supporting columns adjacent to the rear wall. The third delay was set to knock out the remaining columns at the rear wall, to cut most of the columns near the two side walls, and to take down the central columns to the front. Delay number four cut all remaining columns near the street-side walls.

As the MS group was fired, the floor slabs began their vertical

continued on page 108

"151,000 MILES WITHOUT A MAJOR OVERHAUL!"

says Clarence F. Guthrie
Canonsburg, Pa.

Every Ford has
SAFETY GLASS
in every window

"Ford's 332-cu. in. V-8 is the hottest thing on the road for its size!

"Our fourteen Ford trucks all have exceptional durability records. Several '55 T-800 dumps, grossing 48,000 lb., have over 200,000 miles on 'em. They went an average of 150,000 miles before we touched the engine. And for power and performance, too, the Ford 332 engine is the hottest thing on the road for its size.

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NEW '59 FORD F-600 DUMP carries a maximum GVW rating of 19,500 lb. Now available with optional 6000-lb. front axle for greater capacity, longer life.

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LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

Well-Planned Delay Sequence Pulls Walls Inward

collapse. This falling mass, in turn, pulled the walls inward from the top. Again the building fell in a neat heap, and the fracturing of the debris was good.

The 17-second firing sequence went exactly as planned except for one thing—the chimney. The fracturing of the top floor wall apparently released the cable tension too soon and the chimney remained standing. A truck subsequently pulled it down with the same cable that already had been placed around its top.

Building No. 3

The shape and construction of this building presented peculiar problems. The building was roughly U-shaped with a wing at each side of the base of the U.

The east wing had a shallow basement, but the west wing had only a 3-ft crawl space. This was a hazard because most of the charges in this west wing had to be placed above ground level.

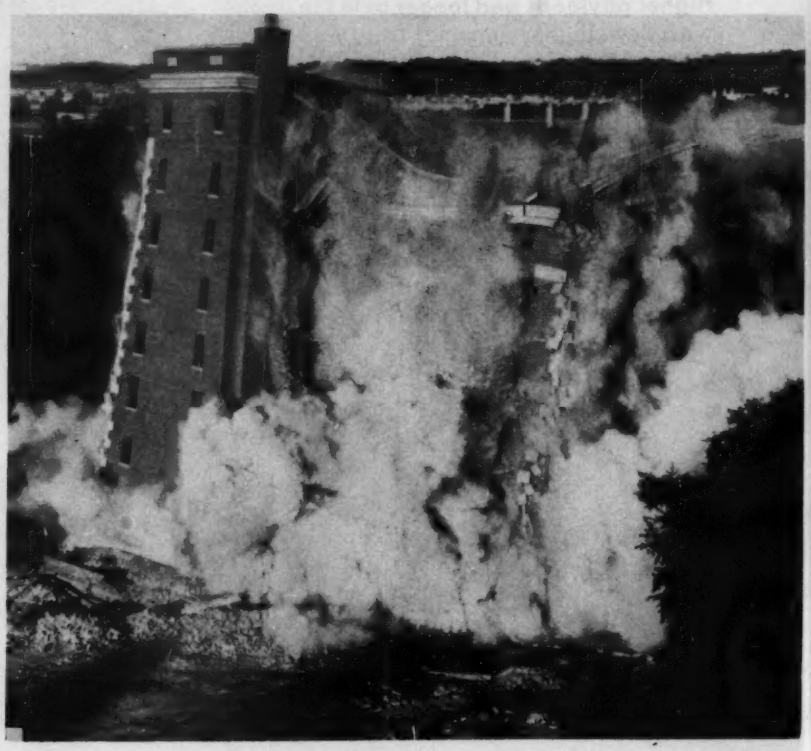
All the first floor openings of the west wing were boarded with 2x8 lumber to control debris from the charges above ground level. The central column in the crawl space, extremely difficult to drill, was loaded with a big 1½-lb charge. The 24 columns, 24 in. square, on the floor directly above the crawl space were drilled with three holes each and loaded with instantaneous and MS charges.

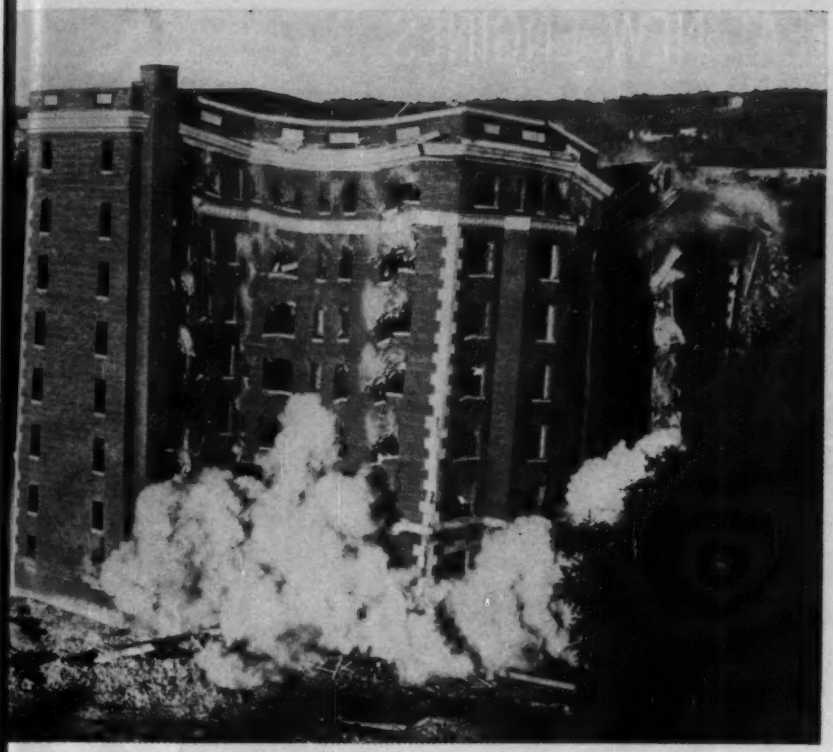
Burnbrae knocked out all the partitions in the main basement and east wing. They loaded the columns in this area with six charges each. The columns in the base of the U were 32-in. round pillars with the same spiral reinforcing that had been so troublesome in Building No. 2. The columns in the arms of the U were 20 inches square.

The 17-second firing sequence began with the heavy charge in the crawl space plus the instantaneous and MS combination on the first floor of the west wing. The first and second delays cut the columns in the adjacent western

BUILDING NO. 3

Far wing collapses ahead of main structure to pull building away from C Street (above left). Collapse becomes general as falling center mass forces walls out of line (above





right). East wall begins to fall as almost intact slab, pulling chimney with it (lower left). Debris begins to fall from wall facing street, but early delays have already caused it to fall inward. Debris is well confined and completely broken (lower right).

half of the central portion. The third and fourth delays cut the supports in the eastern half. The last two delays of the diagonal "walk" through the building kicked out the columns under the east wing. Again, wall columns were lightly loaded to hinge inward toward the center of the collapse.

A fairly substantial charge was fired at the base of the chimney. As before, the chimney was cabled to fall away from obstacles —in this case, the Atomic Energy Commission Building across C Street. This time the scheme worked. The eastern wall of the west wing hinged inward as an almost intact slab and carried the chimney with it.

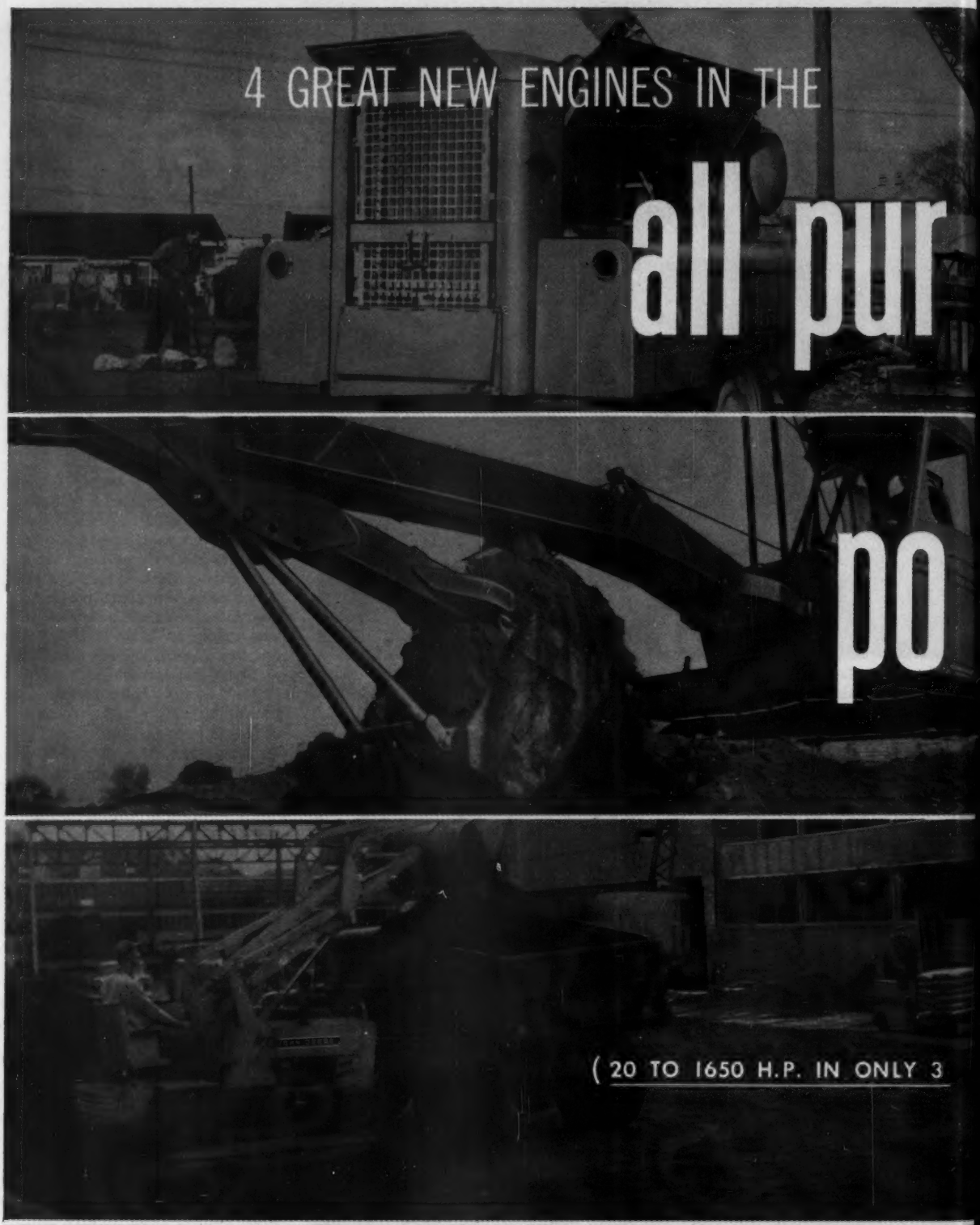
Throughout the whole project the control of debris was outstanding. In anticipation of damage, the city had condemned all the trees along C and 22nd Streets adjacent to the buildings, and all street lights fronting the apartments. Actually not a tree or light was touched. Underground utilities were undisturbed, and there was no breakage or even cracking of glass in any of the surrounding buildings.

The Vibration Engineering Co. reported that "the weight of explosives in even the largest blast could have been increased four times without the ground vibration even approaching the threshold of damage."

Loizeaux says, "I doubt that more than a few charges ever go off at precisely the same instant—even with the instantaneous and MS caps. It may sound like the whole first group of instants and MS's go off together, but actually the force is spread out over a span of milliseconds. It isn't the concussion that brings the building down—it's the removal of support to let its own weight do the work."

The firing sequence time—the actual demolition period—for all three buildings totalled 45 seconds. Fracturing even of reinforced pillars was so complete that balling was nearly eliminated and almost all of the debris could be immediately loaded and hauled away.

Prime contractor for the demolition and clearing was the A.B.C. Demolition Corp. of Arlington, Va. Brunbrae was subcontractor for dynamiting.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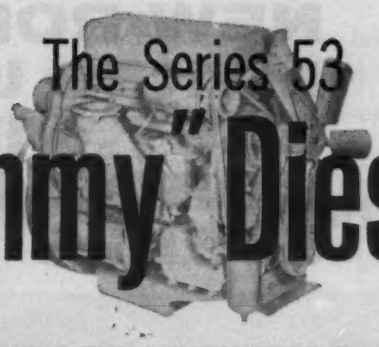

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New as tomorrow is the power concept which GM Diesel has embodied in its All-Purpose Power Line to make you more money on every contract.

Using only 3 cylinder sizes, GM Diesel engineers have more than doubled the number of basic engines—vastly increased the power range—yet maintained the famous GM Diesel family relationship and parts interchangeability.

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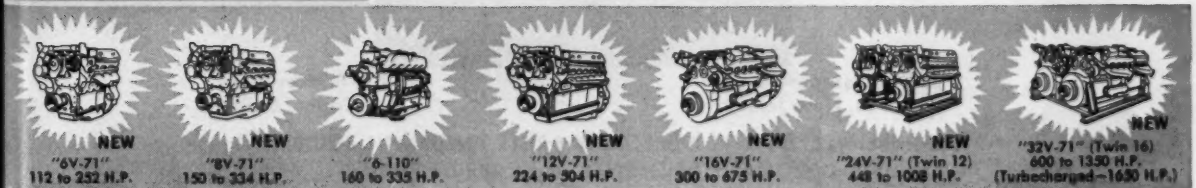

NEW "6V-71" 112 to 252 H.P.

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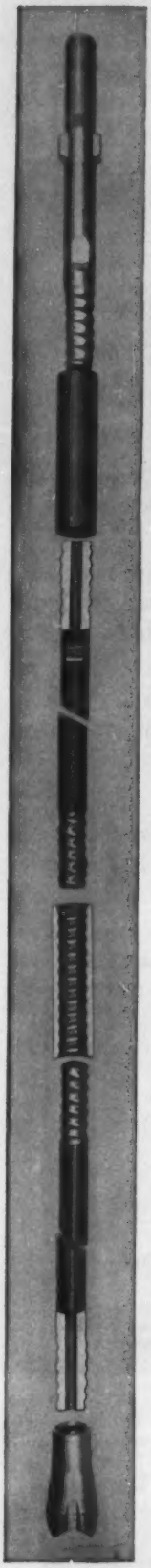
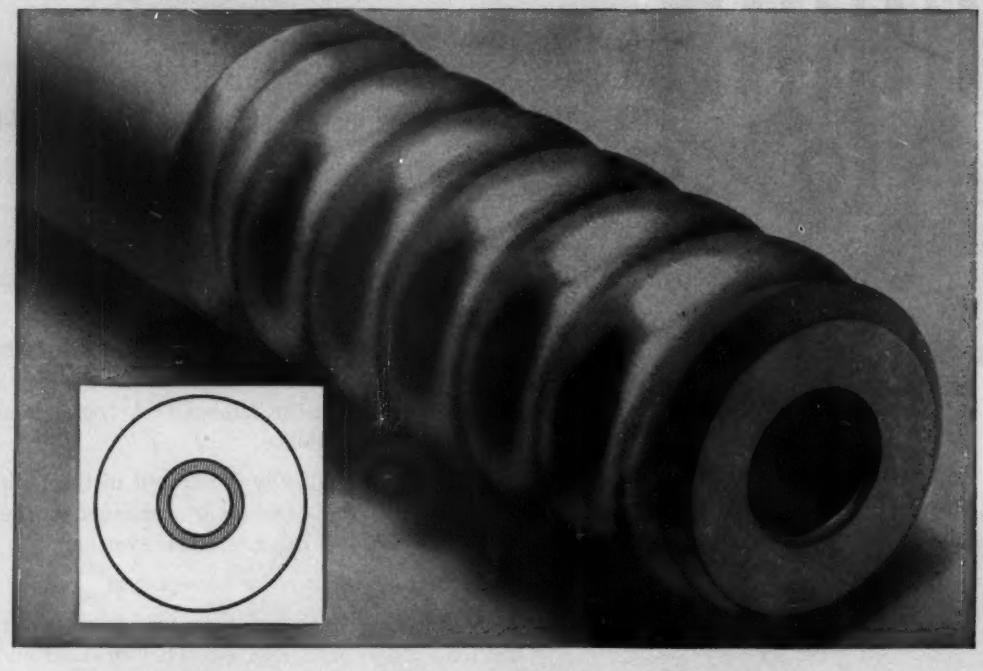
NEW ROPE THREAD MAKES UNCOUPLING EASY WITH SANDVIK COROMANT EXTENSION STEELS





Rope-Type Threads Afford No Starting Points for Fractures

Connections used in extension drill-steel must be easy to assemble and uncouple, and connections must not become weak links during the actual drilling. Sandvik Coromant's new patented rope thread makes it easy to join and uncouple the equipment . . . yet gives a solid and positive connection. The gently rounded form of this thread means trouble-free performance—eliminates common thread and coupling failures found in "saw-tooth" threads.

The complete equipment—bit, rod, coupling sleeve and shank adapter—are all dependable Sandvik Coromant parts made of world-renowned Sandvik alloy steel. A further advantage to the user is that the steel can be re-threaded.

Atlas Copco has special literature on Sandvik Coromant extension steel and long-hole drilling, available to you with no obligation. We suggest you write today!

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The contractor's bid was very low—about $200,000 a mile for 30 miles of four-lane highway—but it was solidly based on plans for a high production operation.

Roadbuilders: Match This Job

A ROADBUILDER seldom gets a chance to roll up his sleeves and go to work without worrying about private property rights, utility lines, or highway traffic. When such a job does come along, it's a rare opportunity to develop top production in everything from earthmoving to paving.

Fredericksen & Kasler of Sacramento, Calif., made the most of the opportunity in building a 29.3-mi freeway link between Victorville and Barstow in California. This is the longest stretch of freeway ever awarded in one contract in California.

The four-lane divided highway runs through largely uninhabited and relatively flat desert country. Included in the contract were 6 bridges, 12 box culverts, several interchanges, and drainage facilities.

Thirteen contractors bid for the job. Fredericksen & Kasler was low with a bid of $5,750,655—nearly $1 million lower than the second lowest bidder and more than $3 million under the highest bid.

F&K's unit prices included 32¢ per cu yd for the 3,420,000 cu yd of roadway excavation, 19¢ per ton for the 1,285,000 tons of imported borrow, 60¢ per ton for more than 500,000 tons of graded imported base material, and $2.40 per ton for about 250,000 tons of plant-mixed asphalt surfacing material.

F&K's low bid was based solidly on extensive pre-bid studies plus an imaginative approach to the execution of the contract. For a month before they settled on the bid, F&K engineers roamed the route in a Jeep; a rig was rented to make numerous test borings. As a result of these studies, F&K reached some important decisions:

- They planned to blast a maximum of only 100,000 yd of rock. Other bidders figured on blasting between 300,000 and 400,000 yd.
- They decided that the several small pits along the route suggested in the specifications lacked sufficient materials to meet the requirements for imported base and plant-mix surfacing. So F&K engineers located a pit ½-mi in diameter about midway on the route that would yield the necessary quantities.
- They figured hauling water in trucks from the only points where water was available (at each end of the project) would be too expensive. Instead, they decided to drill a well close to the Mojave River near Victorville and pump water through an 8-in. pipe to earth reservoirs dug at intervals along the route.

How well this planning paid off is evident from F&K production rates that ranged as high as 30,000 cu yd per day of roadway excavation, 20,000 tons per day of imported base material, and 4,500 tons per day of plant-mixed surfacing. F&K completed the job job about six months ahead of schedule.

First Work

The right-of-way was covered with a light growth of desert brush. F&K devised an unusual way to clear this away. With two Caterpillar D8's they dragged an 80-ft length of battleship anchor chain across the ground. In areas where the terrain was too uneven for the anchor chain to work efficiently, bulldozers handled the clearing.

F&K also dragged finished cut slopes with the anchor chain. One D8 moved along the top of the cut with the anchor chain trailing down the slope. To keep the end of the chain at the bottom of the slope, they sometimes added a headache ball.

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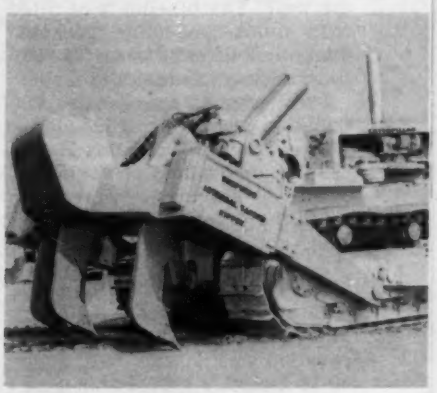

INSTEAD OF BLASTING—Big, hydraulic rippers mounted on heavy tractors handle all but about 70,000 cu yd of the 400,000 cu yd of rock excavation.

RESERVOIRS—Digging 12 water reservoirs along the route and feeding them through a pipeline from a well at one end of the job proves cheaper than water wagon haul.

Development of a water supply system was another part of the early work. F&K drove a well 160 ft deep and inserted 16-in. casing. A 300-hp electric high-pressure 22-stage Fairbanks-Morse pump with an increment starter drew water from the well at a rate of 1,100 gpm.

An 8-in. pipeline nearly 25 mi long, built at a cost of about $150,000, charged water into 12 earth reservoirs spaced at about 2-mi intervals along the route. Most of the reservoirs had a capacity of about 200,000 gal. Only the largest—which had a capacity of 1,500,000 gal—had to be sealed with bentonite; the clayey soil in which the reservoirs were dug held the water adequately.

Pressure in the line ran up to 520 psi; it delivered 700 gpm at the far end, nearly 25 mi from the well. The pipeline was fitted with quick-connecting gasketed joints and takeoff valves to refill the reservoirs as required.

F&K subcontracted water distribution work to the Ganyo Water Truck Co. of Long Beach, Calif. Ganyo's fleet of twelve 2,500-3,000 gal trucks were filled from the reservoirs by portable 3,000-gpm pumps.

Earthmoving

Scrapers and tractors with rippers handled nearly all of the excavation. F&K mobilized a fleet of 12 Euclid, 1 Caterpillar, and 1 LeTourneau-Westinghouse scrapers, 14 Caterpillar D8 bulldozers, and two Caterpillar D9's. In general they kept these rigs massed to handle each cut in order from one end of the project to the other.

Sprinkling Cuts

The contractor usually prewatered cut areas of more than 50,000-cu-yd volume through a movable system of 6-in. aluminum pipe with sprinklers spaced at 80-ft intervals. The sprinkling system usually was moved in and used overnight. In some instances, an area of 500x250 ft got as much as 900,000 gal overnight.

Big Rippers

A feature of the excavation work was the use of rippers to avoid more expensive blasting. F&K had four of the largest and newest rippers on the job.

One was a hydraulically controlled 22,000-lb ripper manufactured by Shepherd Manufacturing Co. of East Los Angeles. It was mounted on a Cat D9 tractor; sometimes another D9 was needed as a pusher. This ripper produces a down pressure of more than 120,000 lb and a ripper pressure of 160,000 lb. Also on the job were two Ateco rippers, made by the American Tractor and Equipment Co. of Oakland, and one Kelley ripper, made by Crutcher-Rolfs-Cummings, Inc., of Houston.

Biggest cut on the job was about 65 ft deep and contained about 400,000 cu yd of material. The lower part of this cut did require some minor blasting. Highest fills on the job rose to about 25 ft.

continued on page 116

TWIN BELT LOADERS—A single operator controls both belt speed of the loaders and discharge gates of the surge bins. He can load a 25-ton truck in only 20 seconds.

LORAIN 2½-YD. 85-A HELPS BOSO AND RITCHIE MOVE 525,000 YARDS AHEAD OF SCHEDULE

28 Lorains have paid off for Boso and Ritchie, Inc.

"There's no substitute for ruggedness and the Lorain 85-A has it. The shale we handled has a density of 2,800 pounds per yard, the sandstone 3,000 pounds a yard. And our 2½-yard Lorain averaged 2,000 yards a day, helped us complete 75% of the job in half the allotted time."

So reports H. D. Beeson, project superintendent for Boso and Ritchie, Ravenswood, W.Va., on Highway 60 relocation job between Burning Springs and Witcher Creek, W.Va.

Unmatched dipper action with "Joy Stick" control. Finger tip "metered" air power control with only two levers eliminated most of the slam bang operation. Smooth, controlled application of power has doubled cable life.

Shear-Ball mounting helps cut maintenance. Lorain's exclusive turntable mounting gives smooth, rock-steady swing—no need for the constant adjustment common to other mountings. Infrequent greasing is all the maintenance that's needed.

Controllability pays off on crane and hoe operations. With "Joy Stick" metered air control the operator combines operations to any degree wanted. "This simultaneous hoist, swing and travel is especially important on bridge jobs when we're using our 85-A as a crane to place steel in tight positions."

Rugged, with low maintenance, superior controls, and readily convertible to shovel, dragline, clamshell, hoe or crane, the versatile 85-A can boost your output whatever your job. Contact your Lorain distributor for the whole story.

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THE THEW SHOVEL COMPANY, LORAIN, OHIO

ROADBUILDERS:
MATCH THIS JOB . . . continued

Producing Borrow

F&K made about 50 test borings in the central, ½-mi-dia borrow pit, then mapped the pit to show the specific locations of various types of aggregates. They took the pit down uniformly about 12 ft.

Two Euclid scrapers hauled base material to a pair of bins that fed two high production Kolman hopper-type belt loaders

CHECK POINT—All material—borrow, base, and plant-mixed asphalt—is weighed on one of two Murphy scales. Weight is flashed on a screen, and truck is away.

that, in turn, discharged into two surge bins. Atop the surge bins were 5x12-ft Kolman scalping screens that shunted oversize to a Pioneer triple roll crusher.

One man generally controlled this entire setup, including the belt speed of each loader and the surge bin discharge gates, from a centrally located control platfrom. The plant operated so efficiently that 22-ton rear dump trucks and 25-ton bottom dumps could be loaded in 15-20 seconds. As many as 65 trucks were used to haul imported base material. Hauls ranged up to about 7 mi.

F&K achieved peak production of about 2,100 tons per hr. Construction of a median strip haul road with detours around major structures helped speed the hauling.

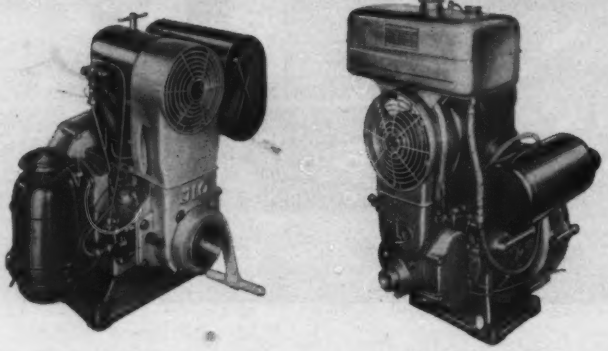
Above the embankment, F&K placed about 1 ft of imported material. On top of this, they mixed in place a 6-in. layer of Class C cement-treated base. Two Pettibone-Wood self-propelled traveling mixers, operating in echelon, mixed and spread the base from loose windrows. Each covered a lane 13 ft wide, and they worked within 30 ft of each other so that they could be supplied from the same water truck.

In an average 9-hr day these two rigs mixed and spread about 31,800 sq yd of material, treated with a total of about 750 barrels of cement. Adjustable trailing strike-off blades mounted on the mixers handled the spreading with help from graders when necessary.

Paving

Two Standard Steel batch plants turned out asphalt surfacing material. One, a 6,000-lb-

NEED DEPENDABLE AIR-COOLED DIESEL POWER?



Jlo Series 365
7 Horsepower

Jlo Series 660
12 Horsepower

JLO* ENGINES

(Pronounced "ee-lo")

Give You

SIMPLICITY: 2-cycle design, practical in this horsepower range, eliminates valving for maintenance-free operation.

ECONOMY: low initial cost is combined with maintenance economy and reduced overhaul cost, when required.

DEPENDABILITY: Jlo Series engines have proved their fast-starting, rugged design in applications the world over.

7 TO 12 HORSEPOWER: high power rating in a small package to match your requirements for a light-weight power source.

AVAILABLE IN THE U. S. EXCLUSIVELY THROUGH

H HERCULES

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Hercules Motors Corp., Dept. 12-B Canton 2, Ohio
Please send me bulletin on Jlo Series engines and the name of my Hercules distributor.
Name
Address City

*Reg. TM of Jlo-Werke, G.m.b.H., Pinneberg, Germany

When it's unhandy to position

Hard-Face it where it Sits!

Low Cost **STOODY 1030**—*the rod that simplifies hard-facing jobs*—**in field or shop!**

POSITION WELDING—Here's a new Stoody Hard-Facing Rod for use on big equipment—parts that can't be positioned readily for welding! Stoody 1030 is easy to weld either vertical or downhand. The arc is smooth and stable with little smoke and low spatter. Runs AC and DC. Welds to carbon steel, manganese steel and weldable cast iron.

LESS WORK—With Stoody 1030 there's no slag to chip, deposits are bright and clean—ready for multiple passes and high buildups, if required.

HIGH WEAR RESISTANCE—Users who know hard-facing metals know that high alloy content is the key to more wear resistance. *With 11.3% chrome, Stoody 1030 surpasses everything in its price class!* This means longer wear per hard-facing dollar!

For high deposition rates, *more actual pounds laid down per hour*...for a *long lasting alloy* at a *low price* try Stoody 1030! It's available from any Stoody Dealer. Check the Yellow Pages of your phone book or write direct to the company. Literature available.

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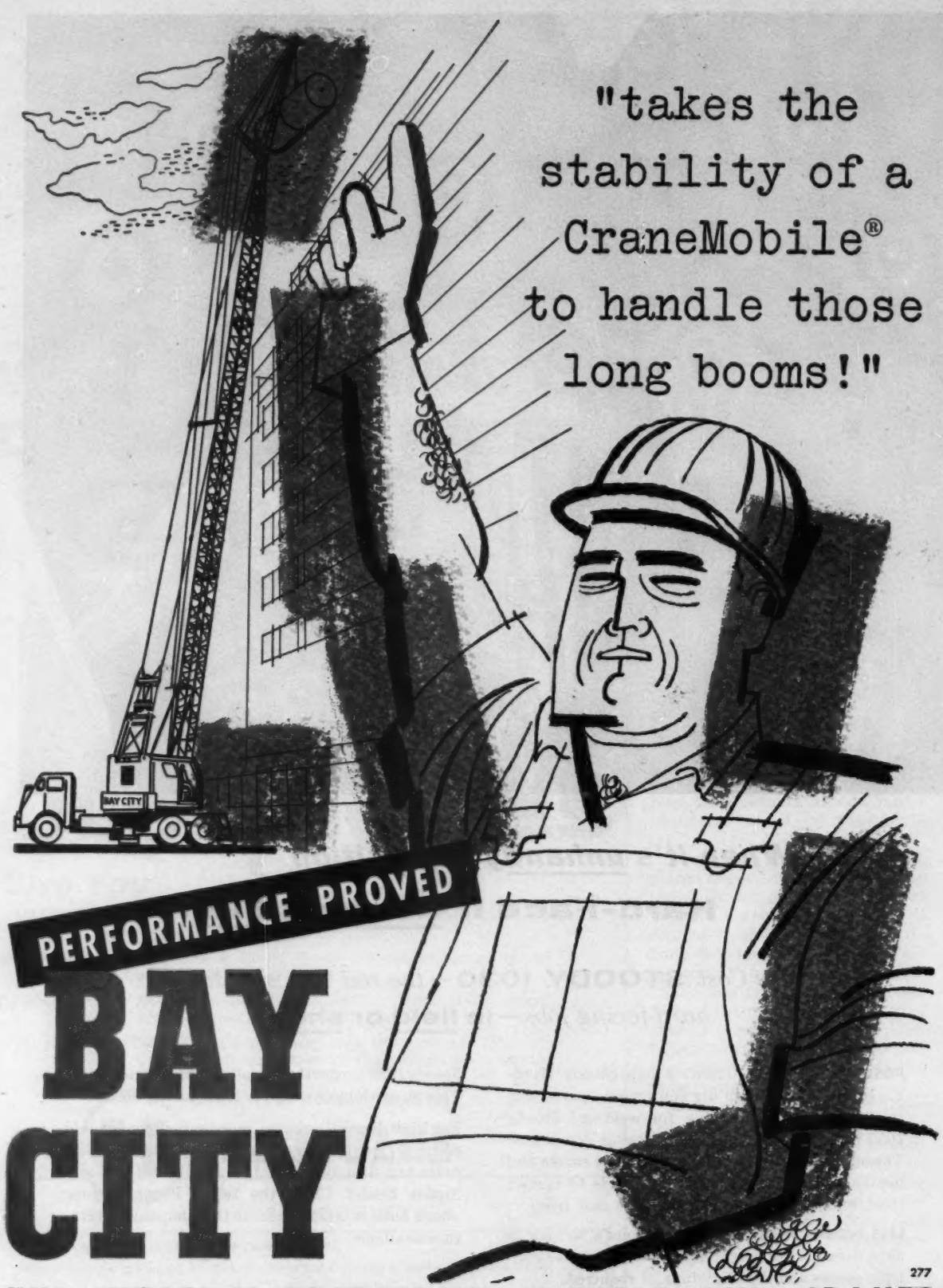
"takes the stability of a CraneMobile® to handle those long booms!"



PERFORMANCE PROVED

BAY CITY

277

THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN, U.S.A.

PREPARING THE BASE—A pair of Pettibone-Wood mixers, operating in echelon, mix and spread the cement-treated base from loose windrows. They put down approximately 31,800 sq yd of material in a nine-hour day. A single water tank truck serves both machines.

CLEANING UP—A Be Ge roto-scraper, pulled by a small International Harvester tractor, picks up excess base material in windrows too small for a bigger machine.

capacity plant, was owned and operated by Industrial Asphalt Co. of Los Angeles. The other was F&K's 5,000-lb plant. The two plants were erected side by side near the borrow pit.

Specifications called for 3 in. of dense-graded surfacing plus ½-in. of open-graded surfacing to delineate the traffic lanes and provide improved wearing surface.

The contractor put down the dense-graded surfacing in two courses. Caterpillar No. 12 graders spread the lower 1½-in. leveling course; two Barber-Greene and one Cedar Rapids pavers placed the surface course. The Cedar Rapids machine alone laid most of the open-graded surfacing. On the leveling course, production averaged about 3½ mi per day; on the paving, about 2½ mi per day.

Compactors

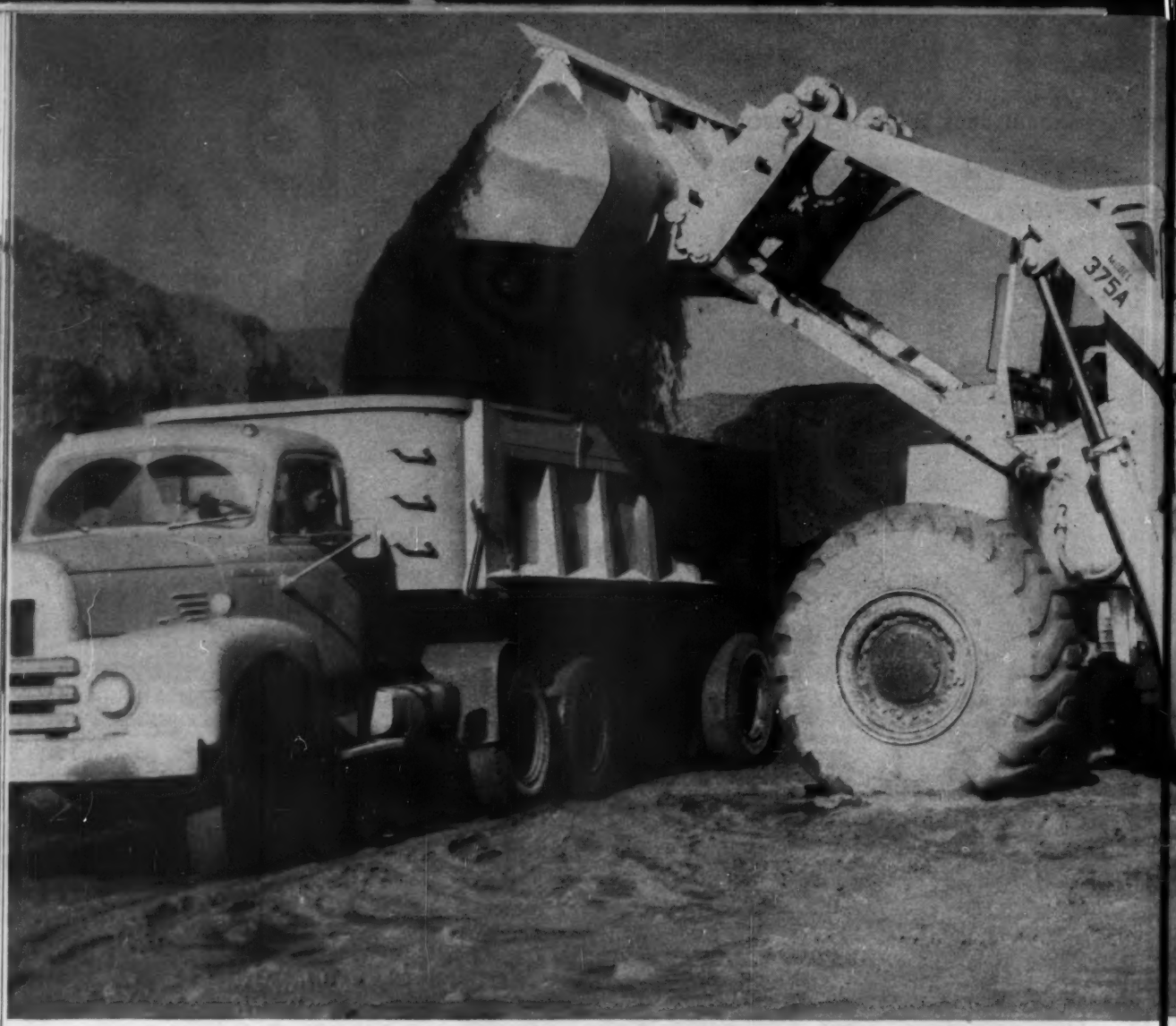
Nearly all types of compactors worked on the job. There were two Essick vibratory rollers, one hand drawn and one tractor drawn; two Barco rammers, one Southwest pneumatic roller; integrally hitched to a Cat DW21 tractor; one Buffalo-Springfield Kompactor; several Huber-Warco three-wheel rollers; and three sheepsfoot rollers.

Special Features

Communications on the job were outstanding. Both the contractor and the Division of Highways engineers installed two-way FM radio nets to communicate with each other and with their own men along the route. The contractor used several models of 6 and 12-v Motorola radios. The radio net probably saved the life of at least one man who was injured on the job; it certainly saved a great deal of time in arranging emergency repairs, settling small differences between the engineers and the contractor.

F&K's maintenance setup was completely mobile. There was no central service yard for the big fleet of heavy machines. Instead, the contractor's completely equipped maintenance trucks, supported by two well-stocked parts trailers, moved over the job. Mechanics and helpers worked a 10-hr night shift, oiling, greasing, hard-facing, and changing bits.

F&K had from 150 to 180 men on the job most of the time. General manager for the contractor was R. E. (Jeff) Kasler; project superintendent was J. R. Beadles; project engineer was Richard Brown. The California Department of Highways was represented by Edward J. Walker, resident engineer.



6 YARDS PER

A seventeen-yard tandem-axle truck loaded in 90 seconds!

A twelve-yard semi heaped in 60 seconds!

Over 500 yards loaded EVERY HOUR by just one Tractor Shovel

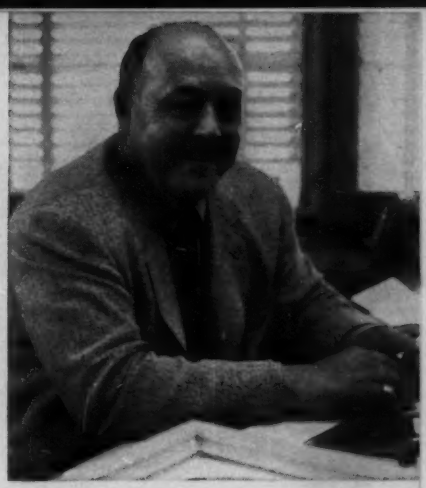
Someone's dream? Not any more! It's been standard practice on general contractor J. R. Cianchette's jobs near Pittsfield, Maine, for almost a year now. That's when his big *6 yard* Model 375A Michigan Tractor Shovel went to work.

Cianchette's problem up until then had been a common one: "How to hold down loading costs and still meet increased production demands."

At first, purchase of more of the fastest rubber-tired 2 to 2¼ Tractor Shovels available seemed the best solution. Then, local Michigan distributor, Portland Tractor Co., showed Company President J. R. Cianchette the new 6 yard Michigan. "Here," they said, "is a machine that can provide between 2 and 3 times the loading capacity of any one unit you now have." When Cianchette saw the big rig in action, he bought!

Michigan output totals 8,000 yards per 16 hour day

Today, the big Michigan truck-loads and plant-feeds over 500 yards of sand and stone *every hour*. "Despite its size, our operators would rather run this big Tractor Shovel than any other," says Mr. Cianchette. "Like all Michigans, it's well-balanced, easy maneuvering, easy operating. It has the right weight and power to handle its bucket. Its smooth operation keeps operator efficiency high all day—even though the one operator alone loads as much sand and stone as



Largest contractor north of Boston, J. R. Cianchette owns 375 self-powered machines, employs 1100 men, does general dirtmoving plus operates own sand, gravel, hot-mix and ready-mix plants. For top production, easier maintenance, lower parts investment, he has standardized on Michigan Tractor Shovels . . . his seven have eliminated need for swing shovels both in pits (despite 18 ft high banks) and on stockpile loading . . . also (below) have eliminated need for cleanup dozers. Cianchette's Michigan fleet includes one 6 yd Model 375A, a new 4 yd Model 275A, three 2¼ yd Model 175A's, and two 2 yd Model 125A's.

PASS

can three men on three 2 yard rubber-tired Tractor Shovels."

Notice how much this big new Michigan looks like the smaller Michigans you see everywhere. It handles easily as they do too—with power steer, power-shift, torque converter, planetary wheel drive-axles standard. Its entire all-Clark power train is the same design as that job-proved in the 10,000 Michigans now in the field.

Excavates sub-base, loads concrete, does many similar scattered odd jobs

Such high production gives the 6-yard Michigan extra time to do all kinds of odd jobs on Cianchette's bridge, road, housing development and airport contracts. For example, it loads out broken concrete runway pavement. It has excavated for new and deeper runway and apron subbases. It backfills around new foundations, footings and slabs. Tows disabled vehicles to the service shop. Unloads trucked-in expansion tanks, reinforcing steel, metal culverts, concrete pipe. Grades haul roads on the work sites. Even loads small five and six-yard trucks with bank-run dirt . . . *needs only one pass (20 to 30 seconds) per truck.*

In all, Mr. Cianchette figures his big new Michigan has cut loading costs "more than 50%." *Perhaps 6 yard "bites" can do the same for you!* Talk it over with your Michigan Distributor before planning your next job.

CLARK® EQUIPMENT

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY

Construction Machinery Division

2403 Pipestone Road, Benton Harbor 2, Michigan

In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

By making initial hilltop cuts 25 to 35 ft wide, yet full specified depth, contractor eliminates need for test borings. Cross-sections thus uncovered reveal types of material, permitting borrow of bulk of hill depending on needs. Select soil is saved for top two feet of road base.

Michigan makes non-stop U-turn well within 44 ft wide roadbed. Rig also U-turns without backup in narrow 33 ft cuts.

Michigan consistently heaps 14 pay yards in 30 to 50 seconds. Material here—and on most of Perrin's 592,000 yd contract—is blue shale-sandstone.

Power-shift and torque converter permit instant shock-free speed changes, so important for saving time on a hilly job like this.

Normal shoot and shovel job turned over to Michigan Scrapers

19 yd pans loaded in shale-sandstone by ripper-dozer. Load time: 30 seconds

Try digging your heel into the tight shale-sandstone terrain on this 11-mile Highway 54 relocation job east of Owensboro, Kentucky—and you'd say the soil was tough enough to shoot. But a cost-conscious dirtmover—Perrin Construction Co of Cynthiana, Ky—decided to tear it up with ripper-mounted dozers, then load with high-powered scrapers. A gamble? Perhaps. But Perrin held a pair of aces—two 262 hp, 19 yd Model 210 Michigan Scrapers.

14 pay yards per trip

First step in moving the rocky material was for the ripper-equipped 200 hp dozer to slice through the borrow area. Only one or two passes were needed to break the shale-sandstone sufficiently for the Michigans—which were then pusher-loaded. Load times, with 200 hp pusher, ran from 30 to 50 seconds. Loads weighed out at 14 pay yards. Cycles were fast . . . so fast, in fact, that on hauls of less than 1,000 feet, it took both the big pusher and a 141 hp tractor to both rip and keep up with the two Model 210's. The smaller pusher, too, needed less than a minute to heap the Michigans.

14 trips per hour

In a typical three-shift period, over typical 2,000 foot one-way hauls, the two Michigans moved 10,000 pay yards. Each machine chalked up about 200 pay yards per 50-minute hour—making 14 to 15 trips over the 4000 ft cycle. Haul speeds averaged 20 mph.

Much less tire wear

According to Mr. Perrin, "The Michigans had no trouble picking up the shale. They have lots of power and payload capacity. We especially like their torque converter drive for this rough material work. It reduces wheel spin and tire wear. With ordinary scrapers, you know, an impatient operator could grind up the drive tires within a month."

Demonstrations now available

We'd welcome the opportunity to show *you* how Michigan's power shift-torque converter drive, high ratio of hp to weight, and its high capacity (three sizes: 10½, 19, 29 yards) all can combine to boost *your* production and efficiency. Call us for a demonstration—*soon*—before you bid your next job.

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CLARK EQUIPMENT

Replaces two crawlers and a compactor with one Michigan . . . ups output 50% . . .

Cuts compaction costs $15 per hour

By buying a machine with a "built-in bonus," a midwest roadbuilder is saving at least $15 per operating hour.

Tri-County Trucking Company of Detroit subbed the sand sub-base and all aggregate haul—about 500,000 yards—from Holloway Construction Co, Livonia, Mich, on a 9-mile leg of new Interstate Highway 23 north of Toledo. The sub-contractor knew he'd be pushing a lot of sand fill, so he got to thinking. Sand is hard on crawler tracks—so why not use a heavyweight rubber-tired dozer. "Perhaps it would also give us some compaction—and maybe we could reach compaction specs with less rollers," wrote Boyce Grubb, Treasurer.

What happened exceeded even these thoughts.

Tri-County brought out a 262 hp, 51,000 lb Michigan Model 280 Dozer. Each 26.5-25 tire was hydroflated with calcium chloride solution—1,750 lbs per tire. Rig was put to work two shifts per day, 6 days per week.

It soon proved fast enough and mobile enough to easily spread the sand delivered by 35 ten to seventeen-yard trucks and semi-trailers. Its output *averaged* 3,000 bank yards (per government cross-

To make load roll faster, George White (a dozer operator since 1934) hydraulically pivots blade slightly forward. Forward pitch of blade also provides smoother grade.

In demonstration of its tractive power, 262 hp Michigan pulls fully-loaded 17-yd dump truck through soft sand fill at site of temporary road.

section) per 10-hour shift. (In contrast, a 35,000 lb crawler, used elsewhere on the 9 mile job, regularly spread 2,000 yards per shift. Completed lifts in both cases averaged 9 to 12 inches deep). But there was an unexpected bonus, too . . .

97% Proctor in 2 to 4 passes

The Michigan, working alone, effectively met compaction specs of 95% Proctor. In fact, government tests showed 97% average compaction. Much of the time, the Michigan got these results simply in normal spreading. But when truck deliveries slumped off, the big rig ran back and forth in 200 ft lengths over the freshly-spread fill. This extra pass or two—a total of three to four passes, *including* passes made to spread—did the job. No specialized compaction equipment was needed. Thus, says Mr. Grubb, "we eliminated expected use of a tractor-drawn 25 ton roller which, we estimate would have cost us at least $15 per operating hour."

There were other savings too!

Grades within inches

1 Michigan's low-pressure tires and rear wheel steer did not tear up fill as other dozers often do!

2 The Michigan alone graded to within a few inches of final specs. According to Supt Tom Quaine, the fill thus required only touchup with a grader.

3 Michigan's 28 mph "go-anywhere" mobility enabled it to move from one end of the grade to another, 9 miles, in 30 minutes or less.

4 Tires, rolling over the sand, instead of grinding in it, saved much of the repair and greasing time needed with each crawler, according to Mr. Quaine.

You can check these savings first hand on *your* job. Just call your Michigan Distributor for a no-obligation demonstration. Four size Michigan Dozers to choose from . . . 165, 262, 375, or 600 hp . . . all available on pay-as-you-profit lease-purchase and other attractive plans.

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CLARK® EQUIPMENT

No matter how tough the job...

CLEVITE 77 BEARINGS GIVE LONGER SERVICE!

When your equipment is operating constantly under adverse conditions such as heat, extreme loading and lugging, the performance "bonuses" of Clevite 77 bearings really pay off.

Take loading—the combination of steel backing with a *cast* copper-lead lining has greater fatigue strength than any other bearing material. And the steel back thickness is increased on service undersizes to provide new engine performance on reground shafts. This construction also offers maximum heat dissipation to combat the heat problem.

Add to these benefits those you get from Clevite 77's precision electroplated .001" lead-tin overlay—superior surface action including corrosion resistance, embeddability and conformability. And a patented nickel plate separating the overlay from the copper lining guarantees these benefits longer.

It all adds up to one proven fact. If you're talking heavy-duty, Clevite 77 will give you better service than any other engine bearing. And the coverage and service you get from N.A.P.A. makes it easy for you to use the best. Get in touch with your N.A.P.A. jobber for more details on the Clevite 77 bearing—or write Clevite Service, 6545 Carnegie Avenue, Cleveland 3, Ohio.

Monmouth ENGINE BEARINGS

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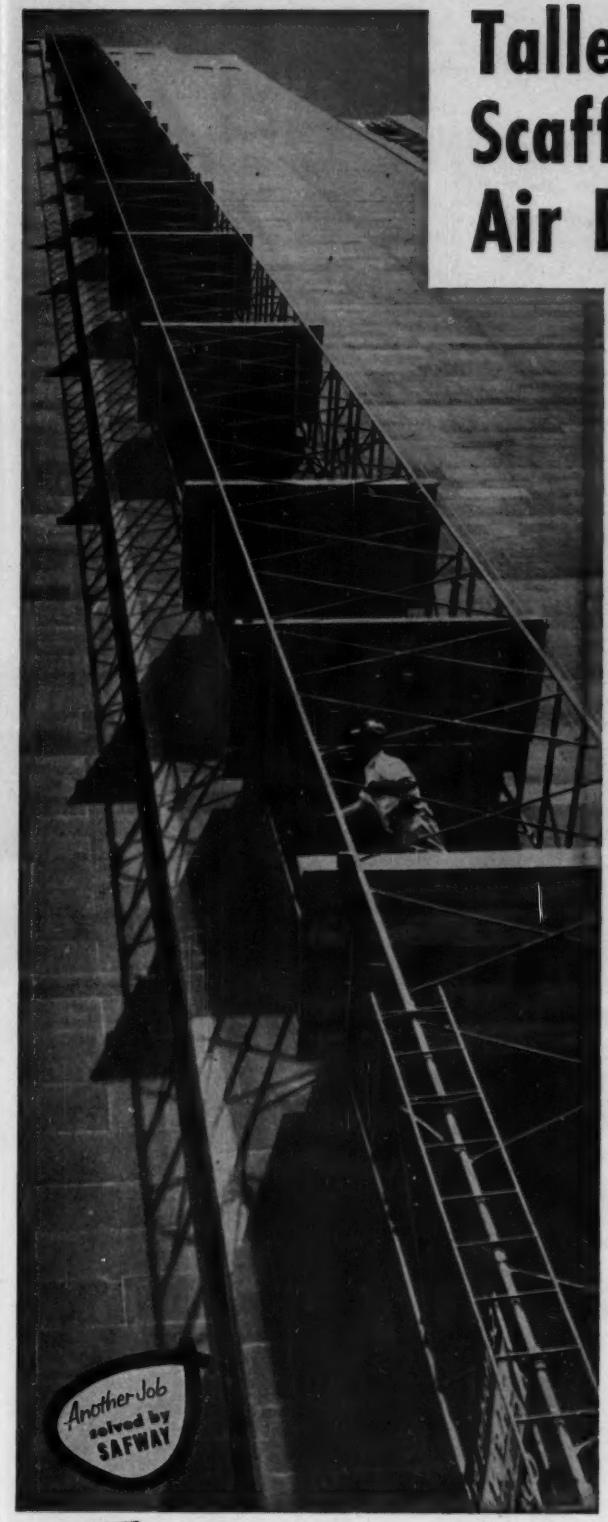
CLEVITE SERVICE: Cleveland Graphite Bronze • *Division of Clevite Corporation* • Cleveland 3, Ohio



Tallest 5′ x 7′ Safway Scaffold Saves 50% on Air Duct Installation

WORKERS GET AROUND FASTER AND SAFER ON 342-FT. TOWER

AIR CONDITIONING the 34-story Koppers Building in Pittsburgh, Pa., required cutting holes at 12 different heights in a blank masonry wall—50 ft. laterally from the nearest windows. Each opening was a two-day operation.

O. H. Martin Associates, general contractors, believed that only a swing scaffold could handle this job . . . despite the considerable time and hazards involved in getting to and from working locations.

To eliminate these problems, a 342-ft. built-up steel scaffold was engineered by the local Safway dealer. Many advantages resulted:

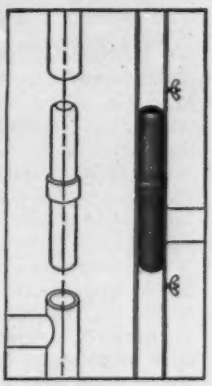
"Our cost for cutting the holes, including the Safway scaffolding, was less than 50% of that for a swing scaffold," testifies General Superintendent W. A. Kennedy. The final saving was even greater. Several holes required alterations in size and location, and the accessibility of the Safway steel scaffold made these changes simple.

SAFWAY LOAD CAPACITY DUE TO PRECISION FIT AND RIGID DESIGN

Although only 5 x 7 ft. in area from base to top, this Safway tower carried a load of about 3,000 lbs. per leg with complete safety. Such capacity results from the strong, rigid design and precision fit of Safway parts. The photo (*left*) shows how the assembled scaffold frames line up perfectly to form continuous 342-ft. tubular steel legs of unbroken accuracy.

Safway scaffold frames are joined vertically with simple "coupling pins" (*see diagram at right*). With a clearance maintained at just 1/32 in., these pins slide smoothly into tubular legs of the frames below and above . . . providing a snug fit that assures accuracy and rigidity in assembled scaffolds.

By minimizing "play" in individual couplings, Safway scaffolds reduce overall or cumulative error and thus can safely support heavy loads at great heights.

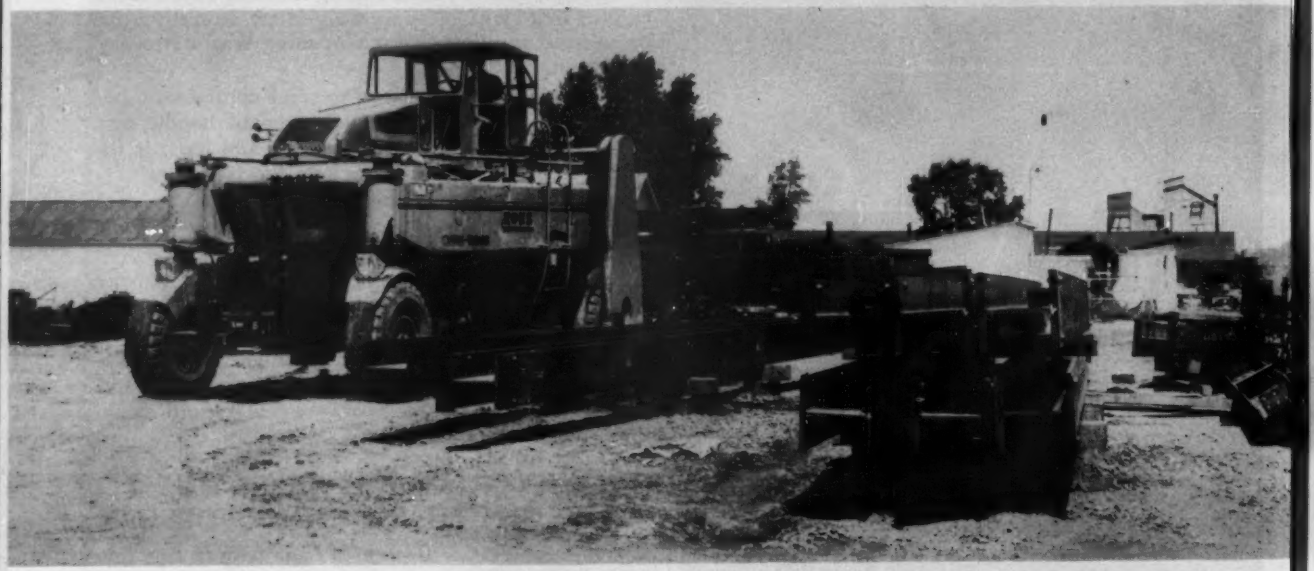


Ask for **ENGINEERING HELP AND FREE CATALOG**

Ask your experienced Safway dealer for scaffold planning and erection service. Ample stocks are available for sale or rental. And write direct to Safway for your copy of **BULLETIN 12.**

SAFWAY
STEEL PRODUCTS, INC.
6243 W. State St., Milwaukee 13, Wis.

Getting structural steel to a downtown building site can be a ticklish job. Here is how one contractor combined a well-planned delivery schedule and a special rig to supply his job with enough steel to keep erection crews busy without crowding the job site.



SPECIAL DELIVERY—At rail siding, straddle carrier picks up load of I-beams for delivery to building site. Beams are stacked on timber bolsters according to setting sequence.

Steel Moves Through Downtown

BY HANDLING structural steel members with suitable—not just available — equipment and by scheduling deliveries carefully, Industrial Construction Co. of Minneapolis moved in steel for a downtown office building quickly, safely, and at the lowest possible cost.

The contractor recently completed the steel framework for a $9,500,000, 10-story office building in the downtown business district of Findlay, Ohio. The 140x 193-ft work area was hemmed in on three sides by existing buildings and on the other side by a busy city street. The only available storage space at the project was an 18-ft wide alley that surrounded the site on three sides.

To avoid over-crowding, Industrial Construction stored its steel at a rail siding about three miles from the job. This forced the contractor to work out a tight delivery schedule that would guarantee to keep erection crews busy without clogging the 18-ft wide alley with steel. Carrying steel through Findlay's business district from the rail yard presented another problem.

Instead of depending on whatever trucks and cranes happened to be available, the contractor brought in a special rig that did nothing but handle the steel members. The rig was a Clark-Ross 25-ton capacity straddle carrier with four-wheel steer.

The straddle carrier enabled the contractor to take full advantage of both the rail siding storage area and the narrow alley that surrounded the job site. With its four-wheel-steer feature, it proved to be much more maneuverable than a conventional truck. Another advantage was that it picked up and unloaded steel without the need for a crane.

At the rail siding, steel was removed from railroad cars by a 25-ton capacity Bay City crane. After it unloaded a shipment, the crane immediately began sorting out the beams and girders according to the order in which they would be needed by the erection crews.

Depending on the weight and size of the steel members, from two to sixteen pieces were "packaged" to make up one delivery

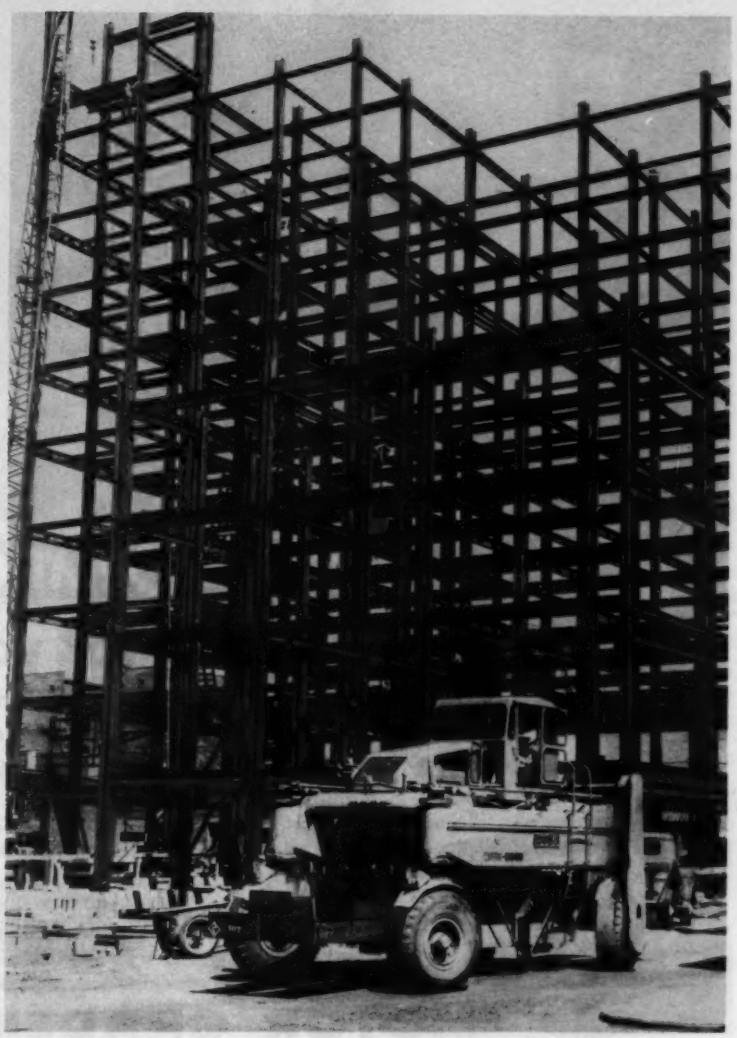
NO ROADBLOCK—Carrier hauls steel members through downtown city streets at 20 mph. Special time studies showed hours when traffic would be at its lightest.

a public relations measure. Although the straddle carrier could move a full load at 20 mph, the contractor did not want its equipment blamed for traffic tie-ups or accidents.

At the project, the carrier deposited its load in the alley surrounding the building as close as possible to the area in which it was needed. The four-wheel-steer carrier was able to spot its load close to the erection crane.

The carrier drove into the alley, unloaded the steel in a matter of minutes, and backed away with little maneuvering. A conventional truck would have required at least twice as much space, and a crane would have been needed to unload the steel.

Due in great part to its efficient steel handling technique, the contractor erected the 2,700-ton frame in less than three months.



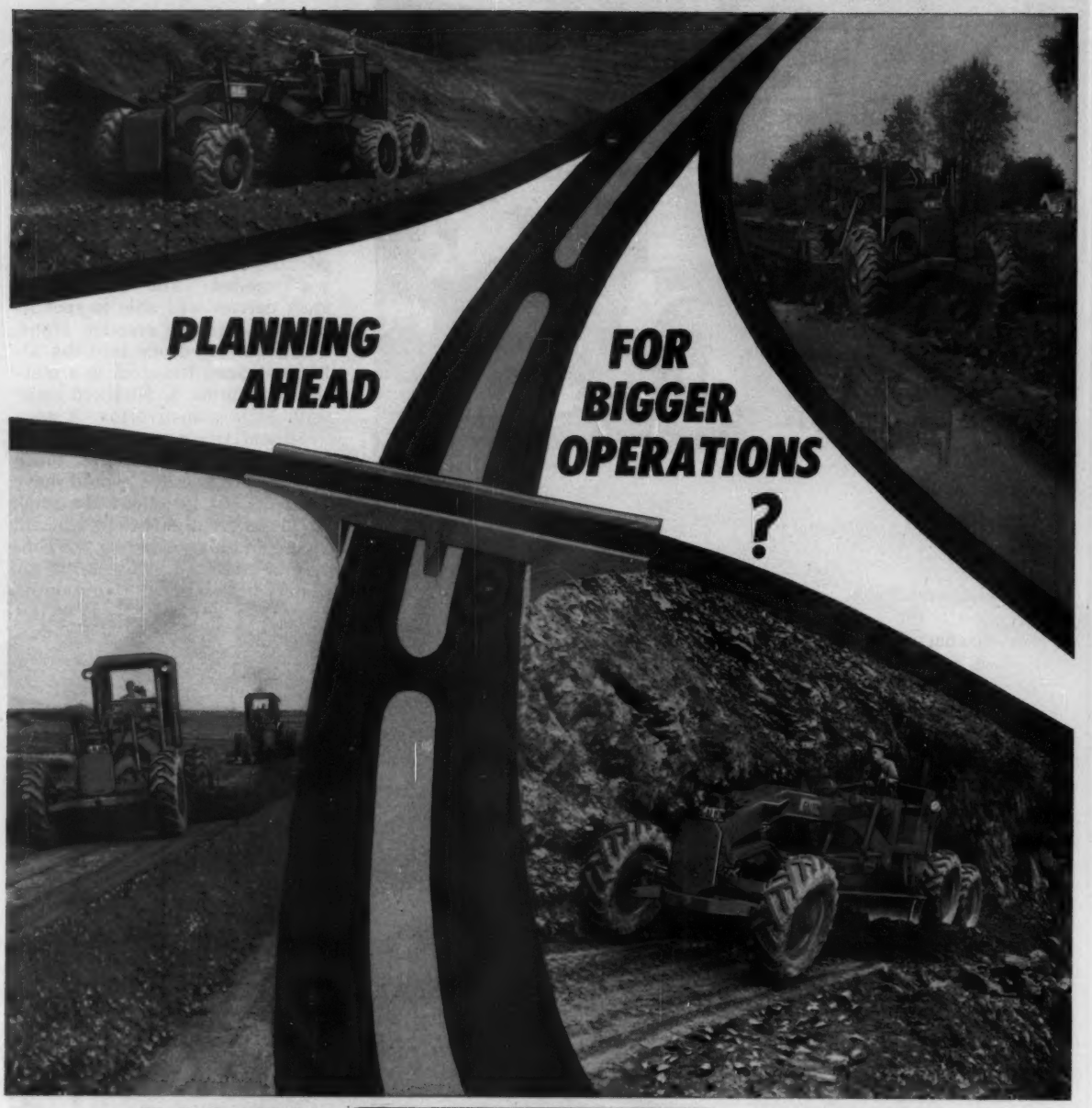
TIGHT QUARTERS—Carrier's four-wheel-steer feature allows the rig to spot steel in a narrow alley surrounding job. It unloads itself without the need for a crane.

Traffic

load for the straddle carrier. So that the carrier could pick up a load easily, each package was set on bolsters made up of scrap 6x6 timbers. As the crane sorted out the steel near the rail line, the straddle carrier picked up the packages and hauled them to the other side of the yard to make room for the next railroad shipment.

Deliveries to the job were made during slow traffic periods whenever possible. Studies indicated that local traffic in the downtown section hit its peak between 10:30 and noon, then slacked off, then picked up again late in the afternoon.

Deliveries were made during the slack traffic periods partly as a safety precaution and partly as



GALION GRADE-O-MATIC GRADERS

are built for you!

They are designed to give increased performance for tomorrow's increased job requirements.

THE GALION IRON WORKS & MFG. CO.

Manufacturers of Motor Graders and Rollers

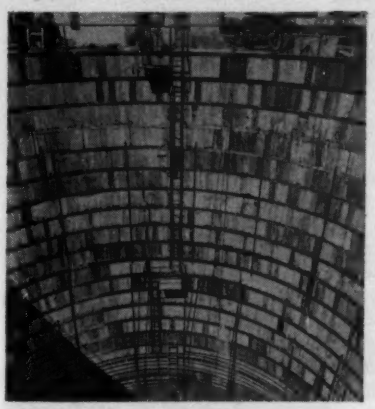
General and Export Offices *Galion, Ohio, U.S.A.*

Cable Address—GALIONIRON, GALION, OHIO

MOTOR GRADERS & ROLLERS

New open shaft, ring waler construction bottoms-out in 29 days

Open shaft construction made possible through the use of COMMERCIAL steel ring walers is proving to be an important boon to time-conscious contractors concerned with sub-grade foundation jobs. Another typical case in point is the foundation for the East Nine Mile Pumping Station in the City of Warren, Michigan.



72-FT. DEEP EXCAVATION is shored by 24 nine-segment COMMERCIAL steel ring walers and wood lagging.

Sunk in hard ground of stiff, moist blue clay, the lined open shaft for the foundation—72′ deep with an inside diameter of 55′ 10″—was bottomed-out and concreted by the Greenfield Construction Company in just 29 days. And according to James F. Peters, Field Engineer for Greenfield Construction, "COMMERCIAL steel ring walers, and the open shaft construction they made possible, were a most important factor in the on-schedule completion of our foundation project."

Unusual? Definitely yes when you consider that caisson-type construction used for foundations in this area in the past has frequently involved delays of months and even years because of soils too hard to allow caissons to pass.

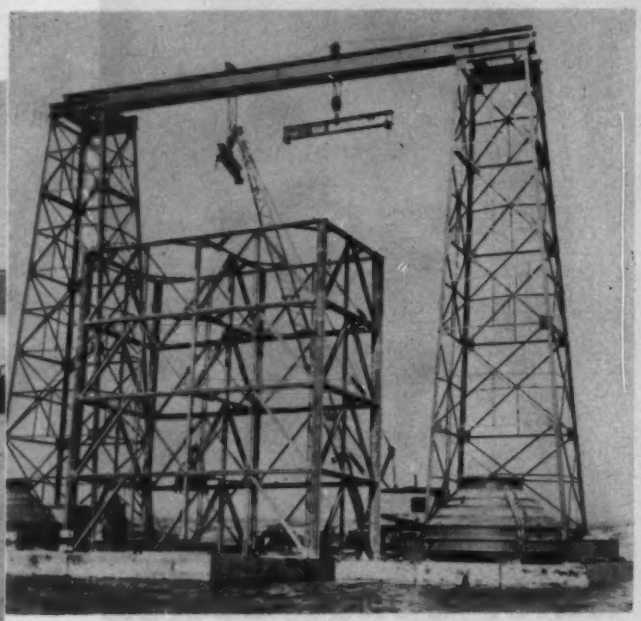
Field Engineer Peters commented, in fact, that, "The ground on our particular project was so hard that I feel if we had used a caisson as originally planned it would have 'hung up' at a depth of approximately 25 feet."

The use of COMMERCIAL steel ring walers also eliminated the need for outside forms on the concrete for the project since the rings (set 3′ center-to-center) and wood lagging served as a form. The close tolerance fabrication (dimensions to + or – 3/8″) of the walers, their easy handling, and still easier installation, not only helped speed progress on the job but involved the services of only four men for actual installation.

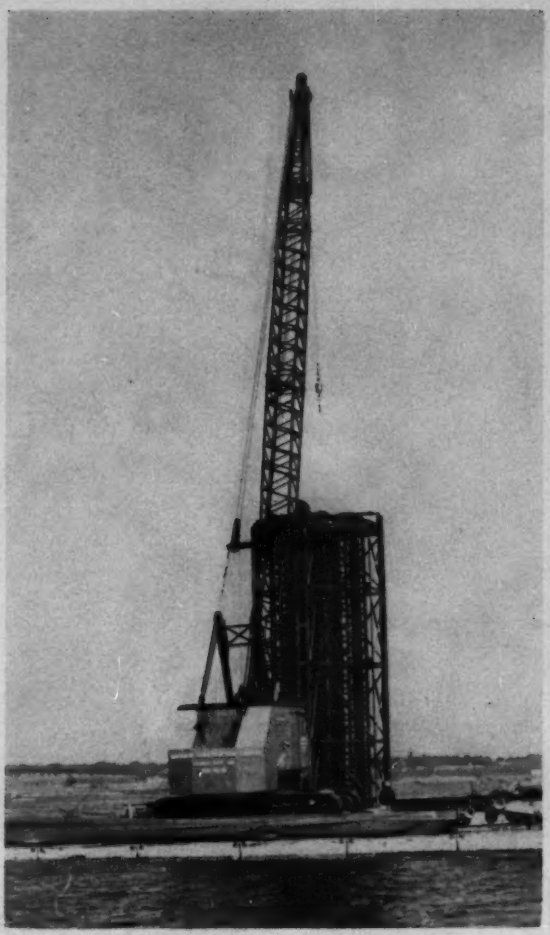
For the full story on how COMMERCIAL steel ring walers can work to your time-saving advantage on open shaft or open pit construction for foundations—whether they be large or small—be sure to send for your copy of descriptive Bulletin 300-P1. Address inquiries to Commercial Shearing & Stamping Co., Dept B-6, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping

So many new ideas—including four unusual tools the contractor developed—are going into construction of 29 concrete piers for the Lake Texoma Bridge that they add up to a whole new concept of pier building.



GANTRY AND CAGE—Erection gantry lowers spud cage into position on lake bottom. Piles at cage corners fix it in place.



PILE TEMPLET—Floating crane moves pile templet into position. Templet contains smaller vertical cages that keep piles in line.

New Way to Build Bridge Piers

PRACTICALLY NOTHING about Oklahoma's Lake Texoma Bridge job can be called conventional. There are no familiar derrick boats, no high pile driver leads, no cofferdams—only strange-looking floating towers and complex steel frames. For Massman Construction Co., Kansas City, has tossed out the rule book to build 29 concrete piers across the landlocked lake near the Texas border. And it's paying off in substantial time and cost savings.

Here are four major innovations that produce the job's strange look:

1. A floating erection tower that lifts heavy frames and positions them within a fraction of an inch.

2. A steel spud cage that guides and holds pile templet and pier forms.

3. A steel pile driving templet that spots H-bearing piles with precise accuracy and holds them for easy driving.

4. A watertight underwater steel form, hydraulically expansible and retractable, that doubles as a cofferdam.

These unique tools are engaged in building a mile-long bridge consisting of steel deck girder spans supported on 29 concrete piers and two abutments. Most piers are 200 feet apart, in water up to 55 feet deep.

The $3.7-million contract with the Corps of Engineers is being handled by a joint venture of Massman and John F. Beasley Construction Co. Massman is handling all substructure work, which represents about 40% of the contract, and Beasley will erect the superstructure.

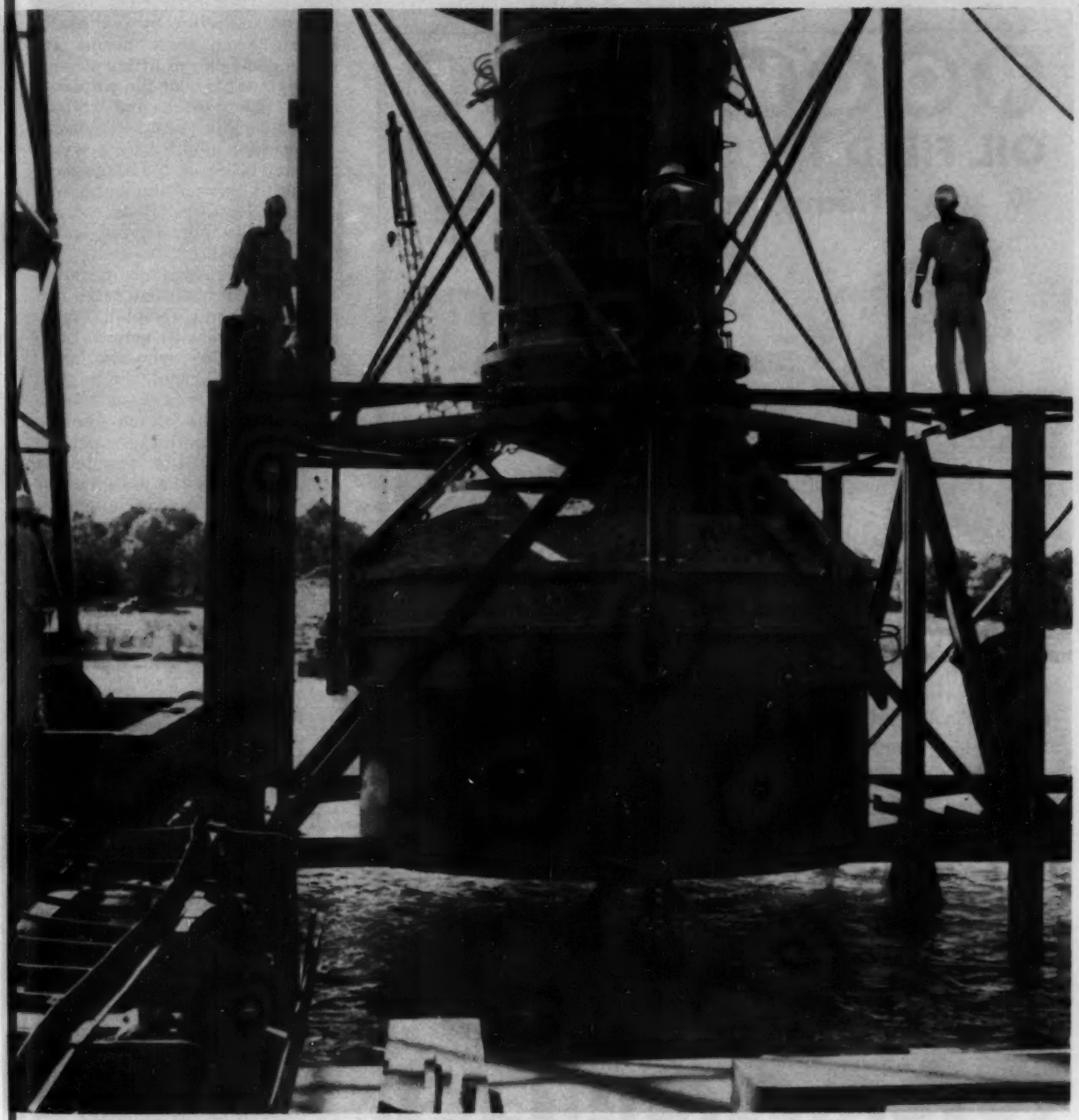
Substructure plans call for piers consisting of twin cylindrical columns tied together just above the water surface with struts. There is no strut called for between footings. Piers are founded on steel H-beam bearing piles driven to bedrock. Cylindrical pile-cap seals, mostly 14 ft 8 in. or 16 ft 5 in. in dia, are topped by inverted funnel-shaped sections that taper to cylindrical columns, either 6 or 7 ft in dia. depending on their depth. Above the strut, most columns reduce to 5 ft in dia.

An alternate in plans is responsible for Massman's development of the underwater form. Original bidding plans called for a rectangular footing on top of the cylindrical seals, but an alternate offered a funnel-shaped footing to be used with pre-placed-aggregate concrete.

To investigate methods of handling the job under the alternate, Massman engineers attempted to design a form that could be stripped underwater. But a few days before the contract letting, an addendum was issued that ruled out use of pre-place aggregate; this meant placing concrete in the dry.

By this time, however, design of the underwater form had advanced to the point where the method now seemed feasible. And Massman asked permission to use the form-cofferdam with the funnel-shaped column section and bearing pile pattern called for in the alternate. This was necessary to Massman, because the underwater form would not have been feasible otherwise. Permission was granted, and Massman bid the job successfully.

Massman's decision to go to the unique form-cofferdam made possible the development of several other job innovations. For example, to support the form laterally in water up to 55 feet deep, some



UNDERWATER FORM—Crew lowers form to lake bed. Hydraulic cylinders will open joints to strip form when concrete has set.

type of steel frame was required. Massman also needed something special to spot and guide H-beam bearing piles accurately in their specified pattern.

Working with these requirements, Massman engineers came up with a group of devices that may very well change some basic thinking on the art of bridge substructure building.

To guide and support both the form and pile templet, steel spud cages were designed. Fabricated in 11-ft lifts, they could be built up easily to work in a wide range of water depths. A cage measuring 19x39 ft is divided into two bays, one for each pier column. Pile spuds are built into the four corners to anchor the cage in position. Running the full length along the sides are vertical runners that guide either the form or the pile templet in place. Massman had ten 11-ft cage sections fabricated to permit assembling two cages up to 55 ft high.

Because of the extreme accuracy required in the positioning of the spud cage, Massman needed a marine rig more stable, powerful, and versatile than the conventional crawler crane mounted on a barge.

Massman's answer is a type of floating gantry. The barge section is roughly 100 ft square, with a 40-ft recess in its bow end. It is made of sectional pin-connected pontoons 10x20x4 ft. Straddling the barge's recess is a pair of 70-ft-high steel towers bridged at the top by two heavy beams. From these beams are suspended a pair of lifting strongbacks centered over the piers columns. Heavy blocks and six-part rigging handle these strongbacks with power supplied by a winch mounted below on the barge deck. Stationed behind the barge recess is a Northwest Model 6 crane that handles pile driving and a variety of lifting jobs.

The third unusual device fabricated by Massman is a large and heavy steel pile templet. Fabricated by Havens Structural Steel Co., Kansas City, who also fabricated the spud cages, the templet is 40 ft high and contains a small cage for holding each bearing pile. These small cages can be shifted within the templet to make up any of the job's five required pile patterns. The templet also is fitted with vertical runners to engage the vertical guides on the sides of the spud cage.

The fourth, and probably the most significant of all Massman's job innovations, is the steel form that doubles as a cofferdam. Built by Dixie Form and Steel Co., San Antonio, it consists of inverted-funnel-shaped steel-plate skin, backed by steel-rib walers, and mounted in a frame that engages the vertical guides of the spud cage.

The form is made in three segments with watertight vertical seams. A series of small hydraulic jacks spaced only a few feet apart along each of the three seams can expand or retract the form as much as 4 in. at each seam. Otherwise, there are no mechanical seam fasteners. The combination of hydrostatic head and the locking force of the jacks tightens the seams against a soft rubber gasket to make them watertight, even against the surging force of falling concrete.

continued on page 139

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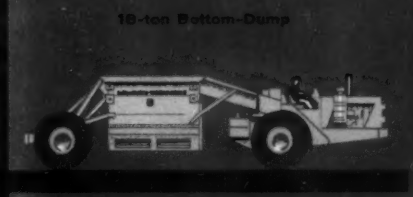

You can make up matched teams for maximum production on any size job from this complete line of LeTourneau-Westinghouse earthmoving machines. See "how" on the following pages:

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Whether you move 200,000 yards a year or 2,000,000, you'll need to move that dirt *faster* and *at less cost* than ever before. And no matter what size contracts you handle, it will pay you to assemble "matched teams" of greatest efficiency to suit *your* production needs. So look over these improved tools in the L-W line and measure their abilities to move today's dirt faster and at lower cost.

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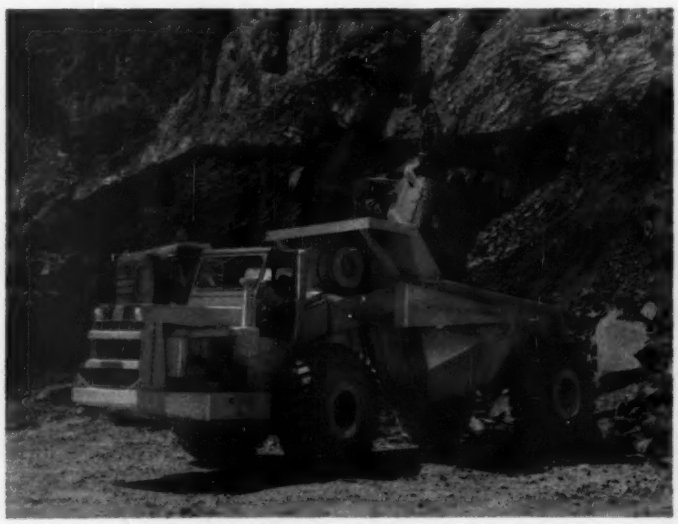

...Each with interchangeable haul units

These same famous Tournapull prime-movers also pull and power other trailing units. Most widely used of these is the well-known L-W Rear-Dump, available in 11, 22, and 35-ton capacities. With flared top, sloped sides, and low rear-entry, loading is fast and easy. Triple-layered, ribbed-steel construction assures long life. Pivot-steer allows machine to turn in less than its own length to get you up to and away from shovels and dump areas *quick.* Maintenance costs are lower because no-frame, no-spring, no-mainshaft construction *eliminates* most of the "troublemakers"! These 30 to 35-mph off-road haulers can be purchased separately, to attach to 'Pull prime-movers you now own, or as complete combinations.

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Known the world over as the "quality line" of motor graders, L-W Adams graders combine more *production-boosting* advantages than any other make. EXAMPLES: all-welded, one-piece box frames, for greater strength, less deadweight. Rubber-mounted engines, to reduce vibration. Easy-operating controls for fast blade positioning. *Best* full-blade visibility. Full-floating drive-axles and anti-friction power trains. *Constant-mesh transmissions with 15 speeds!* And the advanced new POWER-*Flow* models with torque converters offer *infinite* gear ratios, always match power to load.

Seven sizes, ranging from 60-hp "220" to the big 190-hp POWER-*Flow* 660.

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fit in any yardage range

... if you handle jobs that vary widely in yardage, the 18-yd "C" size "package", including the 218-hp Tournatractor® and the Model 550 grader, may be your answer.

... and to handle your odd jobs and clean-up duties at low cost, consider the combination of 9-yd D Tournapull and either the Model 440 or 330 grader.

Check over these combinations of LeTourneau-Westinghouse earthmoving machines. Then see your L-W Distributor. He can help you analyze your work and recommend a "package" best suited to *your* operation.

...and two FAST rubber-tired tractors

When LeTourneau-Westinghouse put tractors on rubber tires, it brought *speed* and *mobility* to tractor operations. Result: you can get *more* tractor work done, in *more* locations, with ONE machine, than you can with *two* crawler-units. You drive L-W tractors around your project-area at speeds to 17.2 mph. You dispatch them like you would trucks ... anywhere there's work to do.

Every spread needs at least one Tournatractor ... heavy construction's only *proven* tractor-on-rubber, with the "bugs" eliminated. This torque-converter-equipped 218-hp unit is available with all standard work-attachments, from a dozer blade to a railroad-car coupler.

Developed especially for push-loading today's big, fast scrapers is the L-W *Twin-C* tractor, combining 40 tons of work-weight, 20 mph speed, and 436 horsepower. Twin engines (kingpin connected for maneuverability) plus synchronized torque-converter power trains help the Twin-C develop 64,500 lbs of drawbar pull.

please turn page

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with machines matched for lowest-cost production?

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In the LeTourneau-Westinghouse line, you can match scrapers, pushers, dozers, and graders, to step up your yardage. Certainly it is worthwhile to call in your L-W Distributor for a careful analysis of your present equipment. Get his suggestions on how to improve the performance of your fleet by matching a few new and faster L-W earthmoving machines with the better machines in your present line-up. You will find that by trading in your older, slower machines for modern L-W tools, you can *greatly* increase your profit-potential.

Trade now . . . while values are still high

Used machines as well as new, are moving out of your equipment distributors' yards at an accelerated pace. There's every reason to believe that equipment demand will equal (and may even exceed) the supply. That's why it is good business to trade now . . . while the market is still "bearish" . . . and dealers are in position to give you better deals. Better make it soon!

As an L-W equipment user you're backed up by these facilities

Distributor service

— prompt, dependable, and as near as your phone. Your L-W Distributor is vitally concerned in seeing that your equipment is always in top operating condition, set for maximum production.

Field service representatives

— furnishing a direct link between you, your distributor, and the factory. Machinery experts in the construction field, they're available to team up with your distributor in getting the best from your L-W equipment.

Factory training schools

—extensive LeTourneau-Westinghouse training facilities, established to train distributor's servicemen, and to train *your own* mechanics in on-the-job service and maintenance.

And remember, your L-W Distributor is an independent businessman in your area, handling not only LeTourneau-Westinghouse machines, but other well-known and reputable brands of construction equipment. He can serve you in many ways, whether you buy equipment outright, pay for it in monthly installments, or rent. Talk to him soon!

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LA-2047-DC-4

Typical Sequence

Here's how a pier is built:

The tower barge positions itself accurately with its recess over the pier location by adjusting four anchor lines with its two 2-drum deck winches. Concrete anchors are spaced along both sides of the bridge centerline, far enough off center to afford some sidewise movement.

When the barge is in position, the Northwest crane on its stern excavates the lake bed to grade with a clamshell bucket. Then a spud cage assembled to the proper height is floated into the barge's recess. The tower's strongbacks pick up the cage and the barge is withdrawn.

Suspended by strongbacks, the cage is lowered to the proper elevation, and its corner spuds are dropped into the lake bed. This position must be accurate because both pile pattern and form alignment depend on it. When the cage is partially planted in the lake bottom, strongbacks are disconnected, the barge moves forward, and the crane drives the spuds home with a Vulcan No. 1 hammer powered by a Gardner-Denver 600-cfm compressor mounted on the barge deck. Final adjustments are then made on the cage to assure exact alignment.

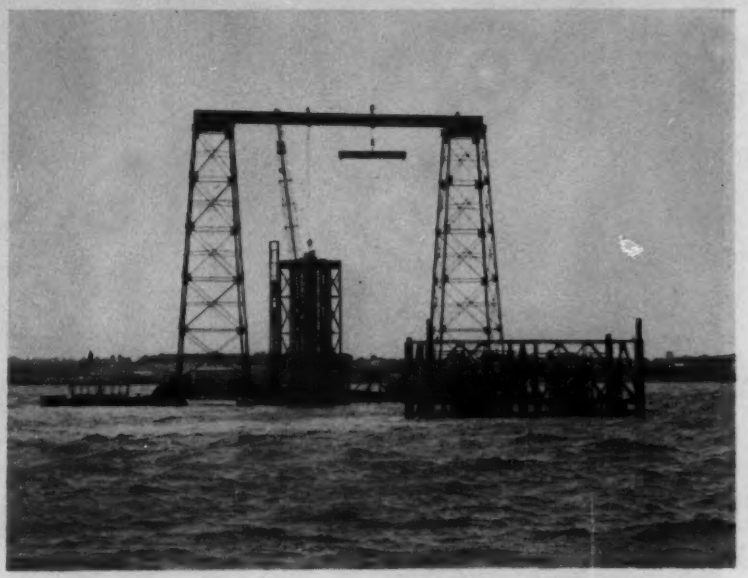
Driving the Piles

Next step is pile driving. The big steel templet is floated into the recess and picked off with one of the strongbacks. The tower barge moves back until the suspended templet is over the anchored spud cage. Then the strongback threads the templet into the runners in the cage, and lowers it to its proper depth. The templet is clamped to the cage, the strongback is released, and the tower barge is shifted forward to place the crane in position for pile driving.

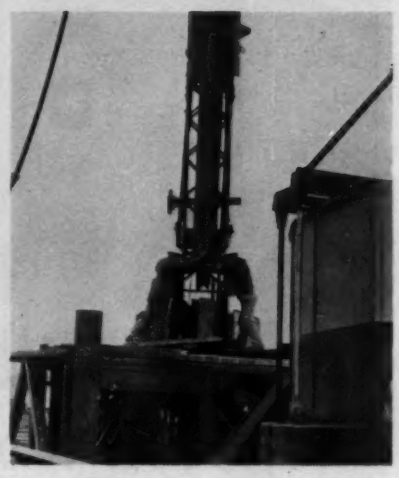
Bearing piles are 12BP74 units trimmed to as nearly exact length as possible. Furnished by L. B. Foster Co., they are hauled to the tower on barges, picked up by crane, and dropped through small cages in the templet, previously adjusted to the required pattern. A special job-built follower is then dropped into one cage at a

continued on page 142

Gantry Places Templet for Piles

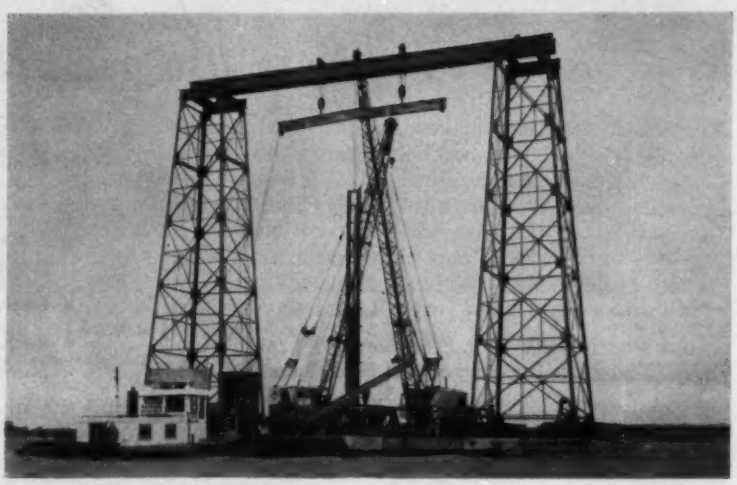


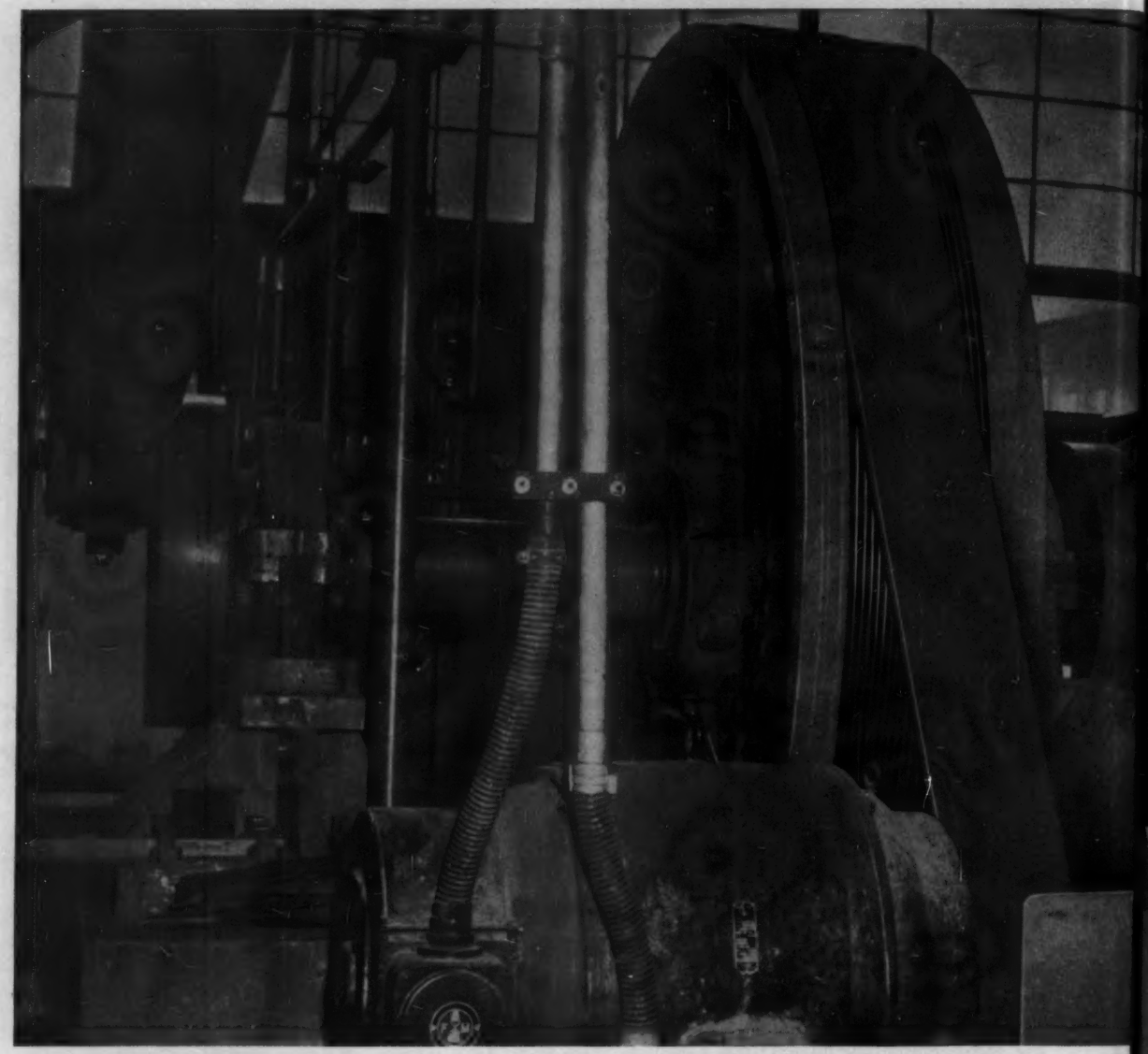
POSITIONING TEMPLET—Erection gantry handles final placing of templet to insure exact positioning. Pile driver then drives the corner piles.



POSITIONING PILES—Pile driving crew positions pile in templet. Follower goes on top of pile. Cage design helps follower meet pile head.

DRIVING PILES—Vulcan No. 1 pile hammer, on barge-mounted crane, moves in close after gantry has positioned templet to drive the piles.





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Patented new design makes the difference! A single, endless, parallel V-ribbed belt runs on sheaves specially designed to mate precisely with belt ribs . . . permits *narrower* sheaves to deliver *equal* power in as little as ⅔ the space of a conventional V-belt drive — or up to 50% *more* power in the *same* space! There's *less shaft overhang . . . less drive weight . . .* "*More* Use per Dollar" with R/M Poly-V* Drive.

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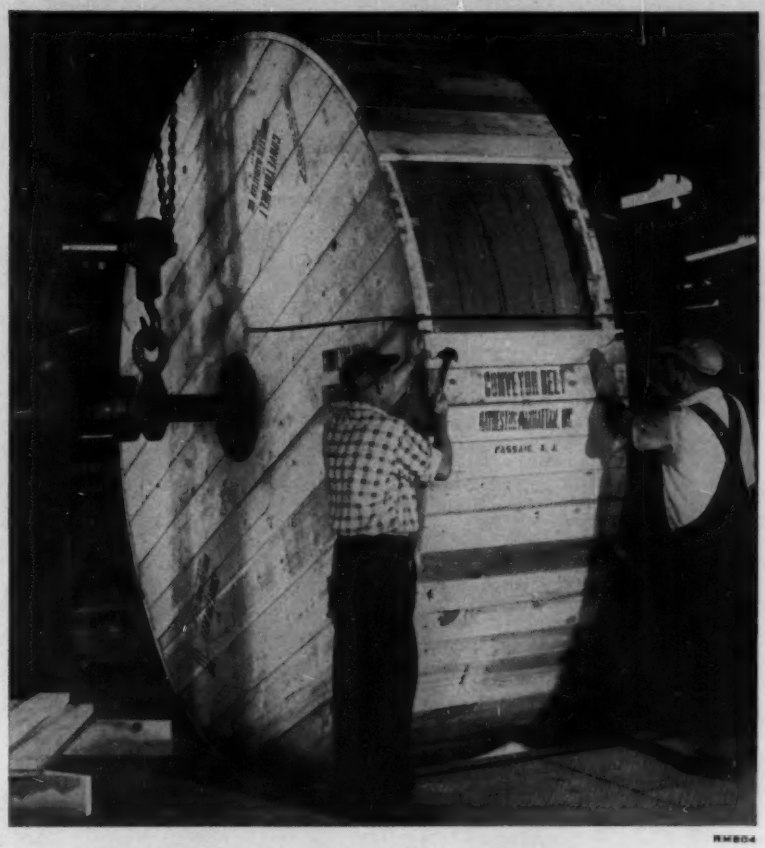

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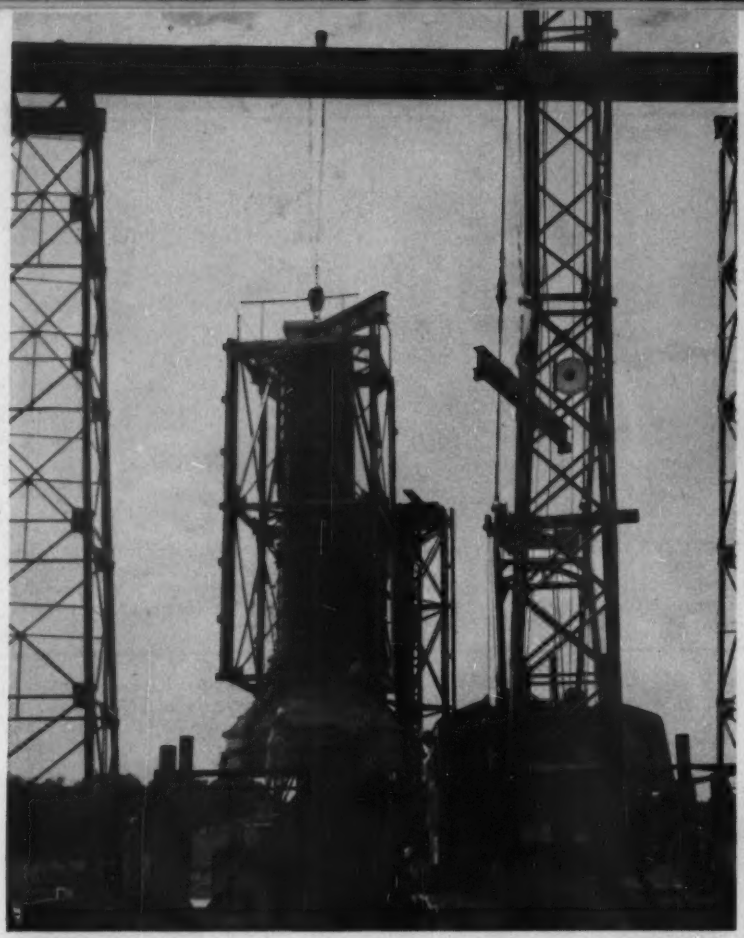
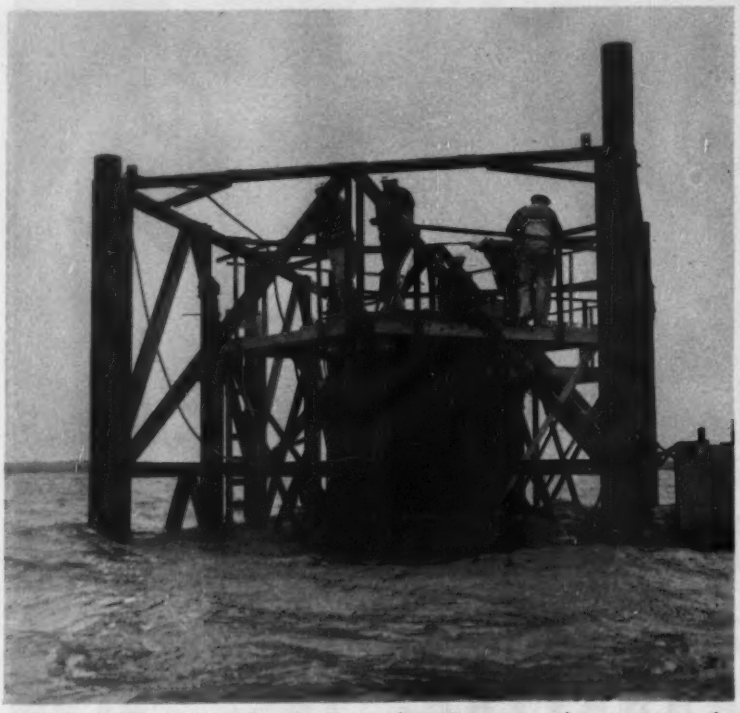


SETTING THE FORM—Erection gantry lowers form along vertical guides in spud cage to lake bed. When form reaches proper elevation it is clamped to sides of cage.



REMOVING THE FORM—After concrete reaches sufficient strength, crews activate hydraulic rams mounted on the three seams. The rams open the form seams 4 in.

NEW WAY TO BUILD BRIDGE PIERS...
continued from page 139

Form Doubles As Cofferdam

time on top of the bearing piles. (Cages are designed so that the follower automatically finds the head of the pile.)

Piles are driven to bedrock by the crane and its Vulcan No. 1 hammer. A special tip reinforcement fabricated by L. B. Foster Co. consists of pointed flanges and 10x12x¾-in. plates welded to each side of the web.

When all piles are driven, the templet is removed, switched to the adjoining bay of the spud cage, and the operation repeated.

Underwater Form

The form for each column is completely assembled before it is hauled to the tower barge. It consists of a permanent cylindrical form at the bottom for the seal, topped by a tapered section with a column piece on top. The permanent bottom form is roughly 2 ft higher than the seal. The column piece generally is 6 ft in dia, except on the deepest piers, where a 7-ft form insert is set between the tapered section and the 6-ft column.

Framed in its steel support cage, the assembled form is floated on a barge to the recess in the tower barge. A strongback picks it up, and the tower barge moves back to position the form over the spud cage. When the form's runners are engaged in the spud cage's vertical guides, the form is lowered to the proper elevation and clamped to the cage.

The tower barge remains in position until a tremie seal is poured, then advances itself 200 ft to begin work on another pier. Meanwhile, a barge mounting a Manitowoc crane moves in, moors itself to four anchors, and prepares for pouring the footing and columns.

When the seals have fully cured, forms are pumped out to convert them to cofferdams. The surfaces of the seals are cleaned, bearing piles are trimmed to

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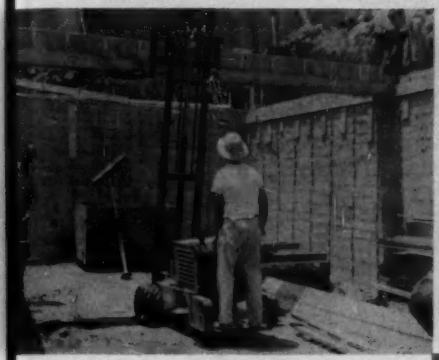
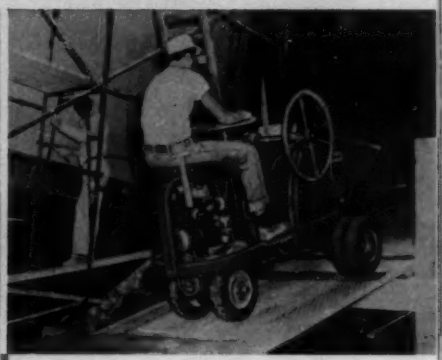


FORK LIFT
Here shown lifting a form into place. Moves palletized block, brick, mortar, etc. with ease. Lifts to 7′ 10″. 1000 pound capacity. Bucket body is interchangeable.

FLAT BED
Hauls lumber, forms, pipe, millwork and countless other materials. 44″ x 48″ or 44″ x 60″ bed. Stakes or side boards optional. Bucket body is interchangeable.



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Efficient way to place concrete and haul bulk materials. Operator walks or rides. Travels narrow runways, thru 31″ doors. Flat bed interchangeable.

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For fast, efficient hauling of palletized mortar, block, brick, bags, etc., where high lift is not required. Saves handling and man hours.

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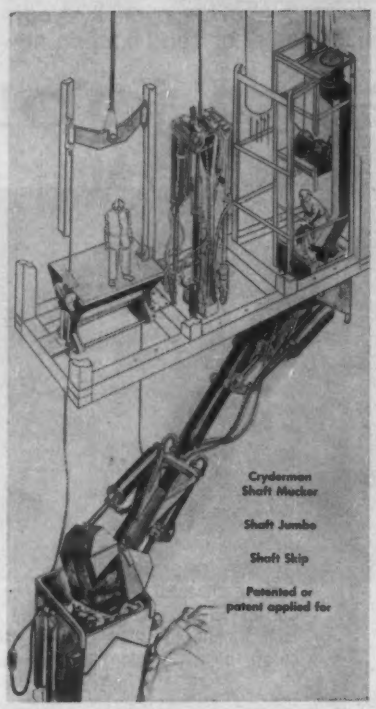
Revolutionizes

Shaft Sinking



CRYDERMAN

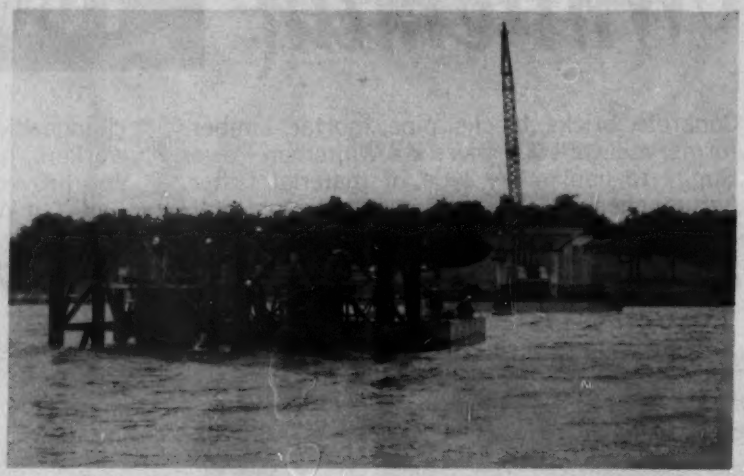
Shaft Mucker

The highly maneuverable CRYDERMAN Shaft Mucker, requires only one man to operate, and is the one machine that will handle both vertical and incline shafts. A collapsible shaft jumbo accomplishes the drilling in record time and a fast-action, tilt-dump, safety skip completes the smooth working cycle of operations. Exclusively a CRYDERMAN creation, from custom design to finished products, this rugged equipment is your best assurance of low-cost operation. CRYDERMAN equipment recently sank 24-feet of shaft in 24-hours.

Check with us on your construction problems. We provide original ideas and custom equipment for special projects.

Machinery Center, Inc.
1201 So. 6th West — HUnter 4-7601
Salt Lake City, Utah

Shaft & Development Machines, Inc.
808 Newhouse Bldg. — EM 3-5373
Salt Lake City, Utah



COFFERDAM—Same form acts as cofferdam after concrete seal at bottom has cured. Crews pump out water, clean seal surface, and pour rest of the pier in the dry.

FINAL RESULTS—Twin cylindrical columns of pier are tied together just above water surface with struts. Above struts, column diameter is reduced from 7 ft to 5 ft.

grade, and reinforcing steel is placed. Wiley 2-yd buckets filled with transit-mixed concrete are transferred to the pour site on barges and placed in the form.

After the concrete has sufficient strength, forms are stripped by activating the hydraulic cylinders mounted on the three seams. The cylinders quickly expand the form by opening the seams as much as 4 in. Forms are then lifted by the Manitowoc crane and placed on a barge for transfer to the next pier. Forms are reused 29 times.

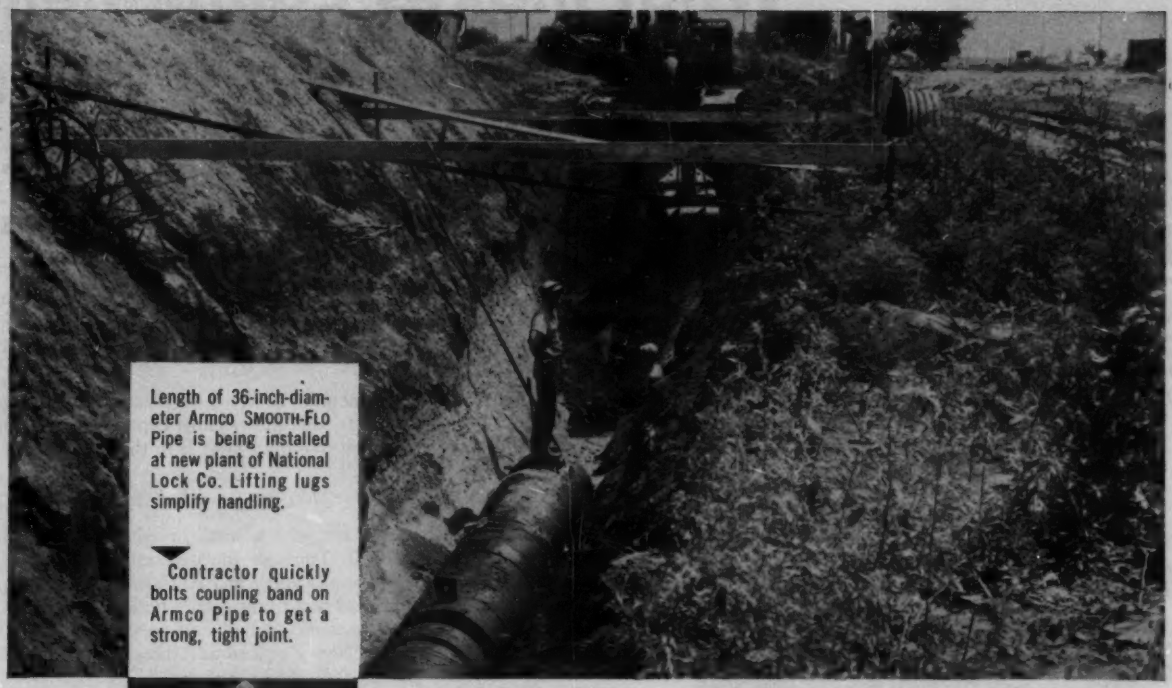
The spud cage is also pulled up by the Manitowoc and transferred by barge to the tower barge, which by this time has completed its work at the next pier and advanced to the following one. The work schedule is arranged to allow the tower barge to complete all its operations on one pier before it moves to another. Because the barge carrying the Manitowoc crane is more maneuverable, it advances and backtracks as needed.

Concrete for tie beams, upper column, and cap forms is placed in steel forms by a Lima or Manitowoc barge-mounted crane.

Men on the Job

Handling the tricky job for Massman are E. J. Wildermuth, project manager; Kenneth Philo, engineer; James Williamson, assistant engineer; and John Farr and W. H. Phillips, general foreman. The unusual job innovations were designed by Tom Kinter, Massman's chief engineer, and the work is under overall supervision of George E. Owens.

Representing the Corps of Engineers are Ira A. Williams, resident engineer; and Frank W. Johnson, assistant resident engineer.



Length of 36-inch-diameter Armco SMOOTH-FLO Pipe is being installed at new plant of National Lock Co. Lifting lugs simplify handling.

Contractor quickly bolts coupling band on Armco Pipe to get a strong, tight joint.

CONTRACTOR SAYS

"Long lengths and ease of joining Armco pipe made for good time"

This was the comment of Edwin Hogan & Sons, Rockford, Illinois, contractors who installed 3,750 feet of Armco Corrugated Metal Drainage Structures for the new Fastener Division plant of National Lock Co., Rockford.

The job was to provide a storm drainage system for the 632,000 square-foot structure. More than half of the Armco Pipe installed was Armco SMOOTH-FLO®, in diameters from 24 to 36 inches. Remainder was smaller diameter asphalt-coated Armco Pipe.

Principal advantage of Armco SMOOTH-FLO is its high flow capacity, an important factor in this installation. For example, most of the 36-inch diameter pipe was on a relatively flat slope of 2 inches per 100 feet.

The pipe was supplied in 20-foot lengths. Lugs, fastened to the pipe exterior, permitted quick attachment of wire rope slings, and simplified pipe positioning.

For data on Armco Drainage Structures, send coupon. Armco Drainage & Metal Products, Inc., 4619 Curtis Street, Middletown, Ohio. In Canada: Guelph, Ontario.

ARMCO DRAINAGE & METAL PRODUCTS, INC.
4619 Curtis Street, Middletown, Ohio

☐ Send new, concise data on Armco Drainage Structures
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ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Santi Campanella, partner whose drive and forward-thinking have contributed to the success of Campanella & Cardi Construction Co. A reader of CONSTRUCTION METHODS for 30 years.

What makes Campanella New England's leading

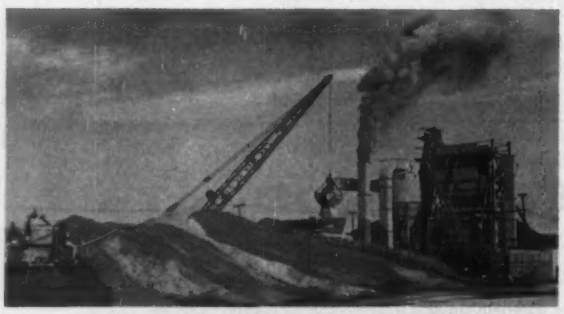
. . . with $18 million of construction in '58
. . . and $8 million of materials purchases

The success of contractors in today's highly competitive construction market is dependent upon many factors: hard work, knowledge of latest construction techniques, equipment, and their use, foresight, drive and many others. By any measure, Campanella & Cardi Construction Co., of Hillsgrove, Rhode Island, is one of New England's top contractors.

Campanella & Cardi Construction Company was formed in 1938 when these partners merged their independent contracting business. From $250 jobs, this partnership expanded its business, matched the growth of the industry, and now measures its contract awards in the millions.

$3½ million grading, drainage and paving project — 7 miles. Route 3, Rhode Island. Required 850,000 cu yds excavation, 300,000 cu yds sub-excavation, 650,000 yds of borrow, 180,000 yds of asphalt and 40,000 cu yds of concrete pavement.

$8 million highway project running six miles in length, Reading, Massachusetts. 11 bridges, 793,000 cu yds of excavation, 433,000 cu yds of rock, 569,000 cu yds of peat, 2.8 million cu yds of borrow.



One of Campanella & Cardi's three asphalt plants (Cape Cod Division above). Three plants produce 4,300 tons per day, the largest percentage of which is used for Campanella & Cardi projects.

Diversified construction proves profitable

Campanella & Cardi started out with a small inventory of equipment, modest office and small staff. Through the determination and efforts of the partners, Santi Campanella and Americo Cardi, the firm's operations expanded to include road and bridge construction, airports, dams, water and sewer lines, cofferdams, asphalt and concrete paving. Most of this work is carried out in New England and the eastern coast states.

$80 million of contracts received in 5 years

Indicative of the success and reputation which Campanella & Cardi have achieved is the dollar volume of contracts it has received in the period 1954-58. $80 million worth of contracts was received of which $50 million has been completed. In 1957, this contractor completed $18 million of construction and received $30 million of new contracts.

Campanella & Cardi expand with the times

Through the years this partnership has prospered, and with this prosperity these two forward thinking men created a separate ready-mix concrete division, an industrial improvement division and three modern asphalt plants. The staff has grown to 450 members and approximately 1,100 workers at peak of operations.

Owns and operates ready-mix concrete and asphalt plants

The Campanella & Cardi Ready Mixed Concrete Company is a separate division serving the needs of other contractors throughout New England as well as its own needs. Established in 1946, with three mixer trucks and one small plant, this division has progressed to five plants and 38 truck mixers. The company's two way radio system provides quick liaison between rolling equipment and base plants, assuring the fastest possible service. In 1947, an asphalt division was established with two plants. Today, 3 plants and a daily capacity of 4,300 tons mark the growth and success of this division.

Equipment and materials play major rolé in contractor's operations

The purchase of the very finest in equipment in order to meet the work loads for which Campanella & Cardi contract has been one of the keys to this contractor's success. Mr. Cardi is especially concerned with all types of equipment that appear on the market, for he is constantly seeking more productive and time saving machinery. From the few pieces of equipment owned by the company in 1938, today it owns and operates over 825 units of machinery which is valued at better than $6½ million. Campanella & Cardi's expenditure for materials runs upwards of $8 million a year. In 1957, this included $840,000 for cement, $123,400 for lumber, 3,700 tons of steel, 185,000 tons of asphalt, 750,000 gallons of gas and oil, etc.

and Cardi one of construction contractors?

. . . 825 units of heavy equipment

Campanella & Cardi's inventory of major equipment

Americo Cardi, partner of Campanella & Cardi. An equipment expert whose key to success has been long hours, and study of latest machinery, techniques and materials. A reader of CONSTRUCTION METHODS for over 15 years.

Progressive contractor invests $2 million in new equipment in '58

Forward thinking contractors like Campanella & Cardi are constantly adding to their equipment inventory, purchasing new and better equipment, which steps up efficiency and saves time. Because Campanella & Cardi specialize in a wide variety of construction . . . requiring many different types of equipment . . . purchasing occupies one of the most important functions in the overall operation.

Here's what Mr. Cardi says on the subject of purchasing:

"The purchase of equipment represents a big annual investment for us. Before the decision is made to buy, I personally ask questions of my people to find out their opinion and recommendations regarding different types of equipment we are using, or are thinking of purchasing. The men in the maintenance shop as well as job foremen, superintendents and operators have opinions and experience with equipment performance. These opinions and recommendations are carefully considered along with my own and Mr. Campanella's judgment and experience before we purchase new equipment."

41 key personnel in Campanella & Cardi subscribe to CONSTRUCTION METHODS Magazine

Americo Cardi, partner, and reader of CONSTRUCTION METHODS since 1943 says:

"I have been reading CONSTRUCTION METHODS Magazine for some 15 years. I am particularly interested in what the other fellow is doing . . . and how he is doing it. Equipment and materials that are being used, new methods covered by this magazine are very helpful. I like the use of photos and job stories which keep me up to date on what's going on in the industry. I also read the ads to keep up with the newest machinery and materials and what they can do."

Santi Campanella, partner, and subscriber to CONSTRUCTION METHODS since 1928 says:

"I have been a reader of CONSTRUCTION METHODS for many years because of the profitable information it provides on construction techniques and developments. I'm interested in knowing how other contractors are doing different types of jobs in order to save money. CONSTRUCTION METHODS fills the need of the contractor for practical guidance."

Important contractors such as Campanella & Cardi know the values of CONSTRUCTION METHODS. Forty one of this firm's key personnel subscribe to it. Advertisers, too, know the value of CONSTRUCTION METHODS in reaching the many important buying influences in 13,250 contracting firms both large and small in all types of heavy construction.

ADVERTISE IN CONSTRUCTION METHODS . . . the contractor magazine!

Your sales message in CONSTRUCTION METHODS is carried each month to 46,920 key men in construction . . . 30,453 in contracting firms. Your advertisement in this publication will do much to create recognition and preference for your product . . . thereby paving the way for higher sales.

Construction Methods AND EQUIPMENT

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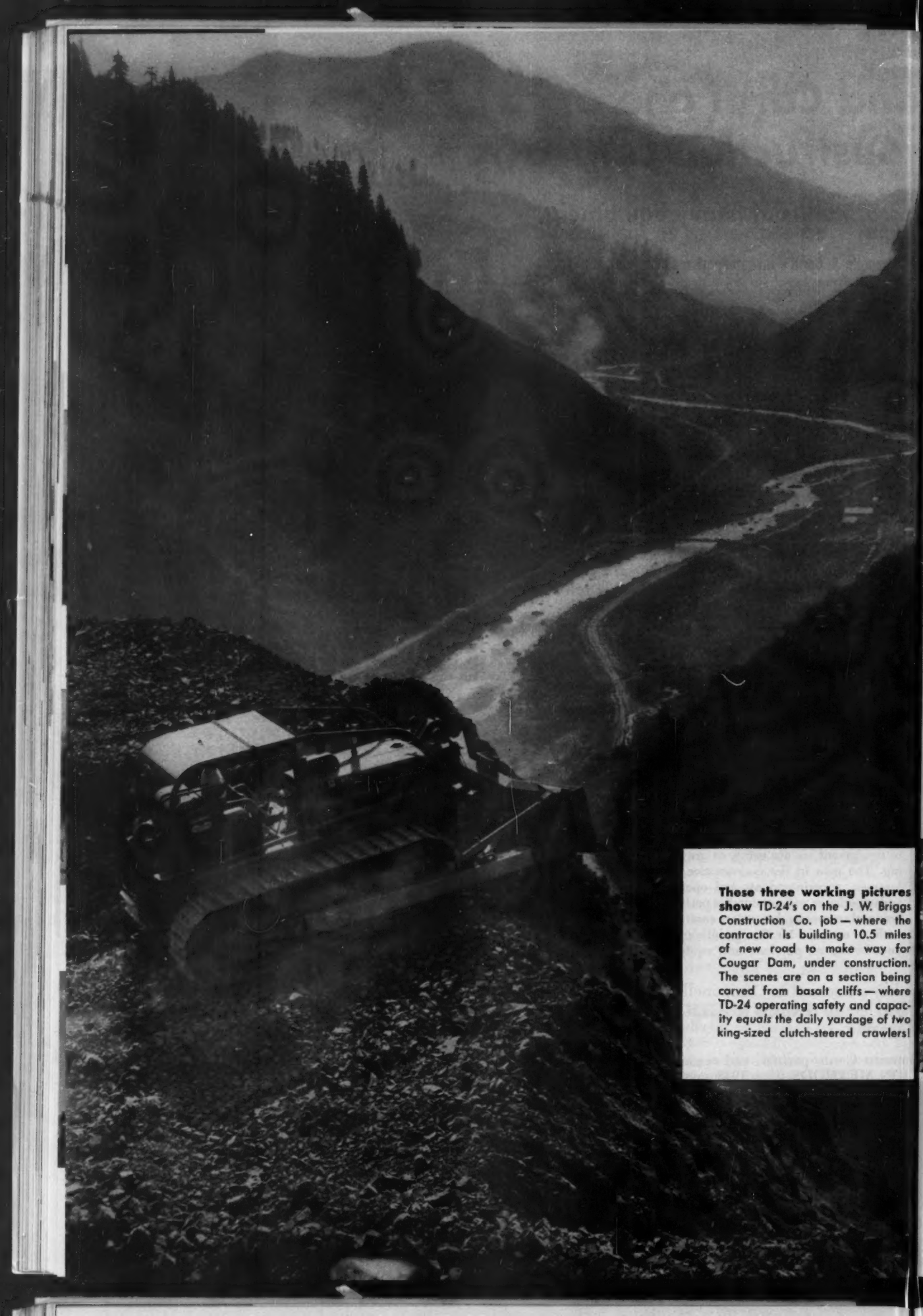


These three working pictures show TD-24's on the J. W. Briggs Construction Co. job — where the contractor is building 10.5 miles of new road to make way for Cougar Dam, under construction. The scenes are on a section being carved from basalt cliffs — where TD-24 operating safety and capacity *equals* the daily yardage of *two* king-sized clutch-steered crawlers!

ONLY PLANET POWERED "24's"

give operators confidence

ON DANGEROUS DOZING LIKE THIS!

As Operator J. D. Steelman (on U-dozer rig) puts it: "The TD-24 gives a feeling of security that sure helps when you are balancing on the narrow ledge of a sheer cliff, 300 feet above the river. The TD-24's steering system, plus excellent vision, good brakes, and all the power you need give confidence that results in high work output—even in the most dangerous conditions.

"TD-24's can push full blades, full time, and can steer without dropping their load."

With Planet Power steering (controlled with 2-finger ease) come multiple safety features that build production-boosting operator confidence. Decelerate instantly with the left foot...apply equal positive braking to both tracks with the single right foot pedal...or, pull back both planetary steering levers with one hand to provide a second braking system, hydraulically actuated. Also, Control Tower Vision lets you see ahead to avoid danger zones.

It takes two king-sized clutch-steered crawlers to equal one Planet Power-steered International TD-24—on this rough, tough mountain road-building job!

Planet Power steering gives your operator full time "live" power on both tracks. Keeps the payload on the move. Gives bonus-load follow-through while turning, even with rock. Eliminates load-spilling "dead-track drag." Equalizes track speed for full-bite benching.

Measure the amazing yardage increase Planet Power-steered TD-24's give you—when blading material around curves; benching a bank or highwall; overcoming the sidedraft of uncentered loads; uprooting or dislodging "anchored" stumps or boulders. See what the high reverse of 7.5 mph means in speeding the shuttle-dozing cycle. Prove TD-24 Hi-Lo power shifting advantages for any crawler job. See your International Construction Equipment Distributor for a demonstration!

Using Hi-Lo power shifting— putting the inside track in high range and the outside one in low range—permits this TD-24 operator to turn safely, and drop the load over the cliff—without spillage on the turn!

Two TD-24's of the 5-unit fleet on this job, dozing rock over the brink of a cliff, 350 feet above the McKenzie River, in Oregon. "Our TD-24's are the units that do most of the close-edge work," states J. D. Steelman, operator of the U-dozer rig.

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

These are the profit-proven f
that lead to Payhauler® fleet o

Look into the rock-lugging, grade-beating 24-ton "95"...

- **Bonus-powered,** with a 335 hp high-torque turbo charged diesel engine to beat steep grades and high altitudes with full payloads!
- **Your choice of torque converter** with powershift, or 9-speed constant mesh transmission. Speeds to match every load and road.
- **Shock-cushioning** of planetary drive axles.
- **Massive frame stamina**—with 277 lbs. of high-strength, shock-resisting steel for each rated ton of carrying capacity.
- **Springs with extra leaves** and **extra length** to cushion the payload, smooth the ride.
- **Positive power-steering, Torqmatic braking,** panoramic vision, for unmatched operating ease and load-speeding safety.
- **Up to 25% higher hauling speeds**—the "95" can high-ball, fully loaded, up to 38 mph.
- **Faster reverse speeds**—for spotting to load, or positioning full loads for dumping. The gear-drive "95" can travel up to 7.1 mph. in reverse.
- **9-second dumping**—another cycle-speeding feature.

...and the 250-hp, 18-ton "65" has equally outstanding features.

International® Construction Equipment

International Harvester Co.
180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

Power for steep grade climb-outs wins steady job for five "65's"

Bonus Turbo Charged Diesel power to deliver extra-tonnage loads up a haul road with a 17% average grade accounts for the dependence of Caldwell Engineers on five "65" Payhaulers—on the $13 million hydro and flood-control Oliver Dam, Columbus, Ga.

Contractor doubles load delivery speed with positive Torqmatic braking!

Central Pennsylvania Quarry and Stripping Co. credits *Torqmatic braking* of their 5-unit "95" Payhauler fleet with doubling load delivery speed—by increasing safe downhill hauling speeds! They've compared "95's" directly to other off-road equipment on rock-hauling duty!

features ownership!

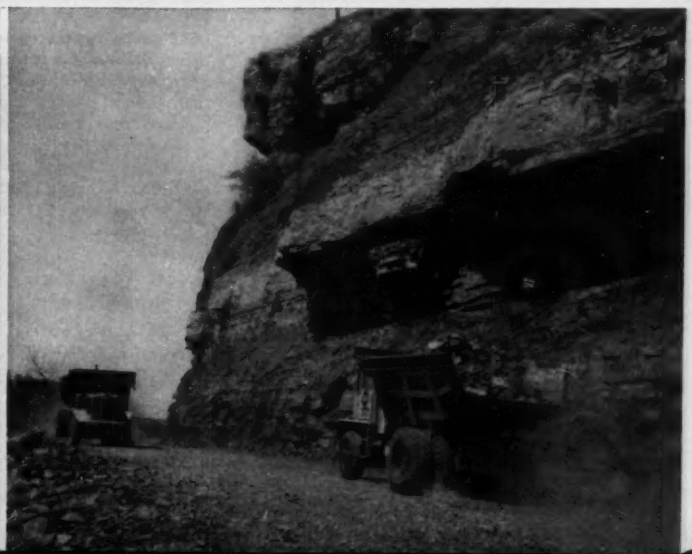
Prove what it means to command the Payhauler ratio of power to payload—for hauling up to 25% faster; beating grades and altitude. Try Payhauler "pick-up-truck" spotting ease—"zip-around" power steering—exclusive high reverse—and all the other Payhauler advantages. See your International Construction Equipment Distributor for a demonstration!

High-percentage availability proves inbuilt stand-up-ability!

98.5 work availability through one measured 12-week period is the mark set by a 10-unit "95" Payhauler fleet—high-balling rock over steep High Sierra grades, on mammoth Pool Hydro Project, for Southern California Edison Co. Such records result from reserve power, reserve frame and transmission strength, and reserve shock-resistance!

Another thirty "95" Payhaulers join Merritt-Chapman and Scott fleet!

Merritt-Chapman and Scott Corporation has added thirty more "95" Payhaulers to their Niagara Power project equipment spread. Now, the M-C and S Payhauler fleet totals 62 units—largest in the world! On St. Lawrence Seaway, huge Glen Canyon dam, and Niagara Power Project, M-C and S have proved rock-lugging, grade-beating Payhauler performance—and confirmed their satisfaction with repeat orders.



How a clam-action 4-In-1 gives you a one-man "equipment fleet"

Many-purpose Clamshell

Using clamshell "stand-and-load" one-gulp bucket fill, the 4-In-1 can do clean-up work twice as fast as ordinary buckets—can "surround" elusive materials without "chasing them"—can give amazing advantages on stockpile loading. "My TD-9 4-In-1 did a clean-up job in only 4 hours that usually takes any other same-sized rig 8 hours to do!" says Robert Findlay, Clarks Hill, Indiana.

Excavator-Loader

Skid-Shovel position applies the tremendous excavating force of pry-over-shoe break-out action—enables the International Drott 4-In-1 to "double" for power-shovel performance on a long list of jobs. This TD-9 4-In-1 is breaking up, digging up, and loading out old concrete walks and masonry curbings for Contractor Ralph Torres, El Paso, Texas.

"Carry-type Scraper"

As "carry-type scraper" this TD-9 4-In-1 gives inch-close lot-grading accuracy, spreads *with precision*. Close-coupled, this unit delivers its big capacity where "long hitched" outfits can't profitably maneuver. "The 4-In-1 gets me jobs an ordinary loader can't begin to do," states Owner Harold Swanson, Richmond, Calif. "My competitors are buying 4-In-1's to equal what I can do."

Earth-rolling Bulldozer

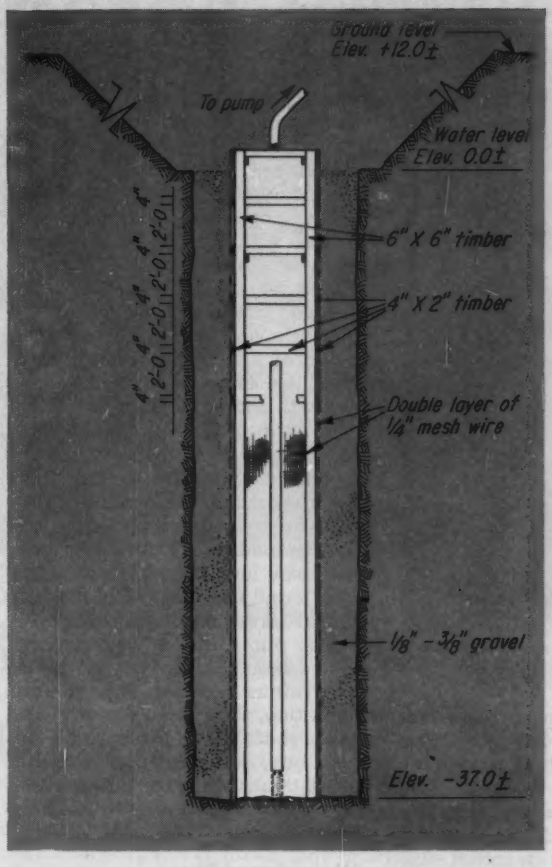
Lift the clam lip hydraulically, and you've got earth-rolling bulldozer action, seconds-fast and fingertip easy. This TD-20 4-In-1 is doing all the excavating and rough grading for a new 6-acre factory. "I switched to the TD-20 outfit to get maximum volume as a one-man-operating contractor," reports Owner Albert George Gee, Cedar Rapids, Iowa.

Count the machines an International Drott 4-In-1 can replace for you—count the thousands of dollars it can save you—count the profitable jobs it can get you, competing with contractors who bid on the basis of using a yard full of limited-duty rigs. And measure the performance protection value of exclusive shock-swallowing Hydro-Spring. See your International Drott Distributor for a demonstration!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT®



PUMPS LOWER WATER—Inside shack, a 20-hp Layne vertical turbine pump, set at top of 38-ft-deep shaft, draws down water table under 300x600-ft building lot. Two sumps—one in center of each half of lot—dewater site. Outflow pipe runs to nearby sewer.

Two Sumps Drain Building Site

A PAIR of turbine pumps are pulling water from deep sumps to dewater the site of the Smithsonian Institution's new home in Washington, D.C. Foundation contractor Spencer, White & Prentis of New York settled on the sump method after studying the results of preliminary tests.

Cause of trouble in this case goes back over a hundred years. The site was then traversed by a canal running from the Potomac River down along the present Mall to the Capitol Building. Material dumped in the area when the canal was filled in is a hodgepodge of sand, gravel, some moderate size boulders, and lenses of dense blue clay.

The boulders ruled out a wellpoint system for lowering the ground water table. Points couldn't be driven through the boulder-strewn fill. SW&P planners liked the idea of drawing down the water by sinking two deep shafts along the centerline of the 300x600-ft lot and pumping them out with deep-well pumps. But they had to make sure that the pumps would draw down the water level all over the lot—not just near the shafts. And this hinged on the permeability of the fill material covering the site.

To find out, one way or the other, SW&P engineers built a plastic model showing the stratification of the fill material. Working from boring records, they marked the location of the clay lenses at different sections across the lot on strips of transparent lucite. Then they fitted the strips together, like the criss-cross cardboard dividers in an egg carton, to form a three-dimensional model. The clay seams show up clearly as dark ribbons when an observer peers through the sides of the model.

BOULDERS—Wellpoints couldn't be driven through the coarse gravel covering the lot.

The model shows that the clay lenses are not continuous seams. Instead they are scattered through the material in haphazard fashion. They don't interfere with ground water flow through the highly permeable sand and gravel.

So SW&P went ahead on their plan to drain the ground with sumps. There were still questions to answer, however. For one: how big a pump to use to draw water from the shafts?

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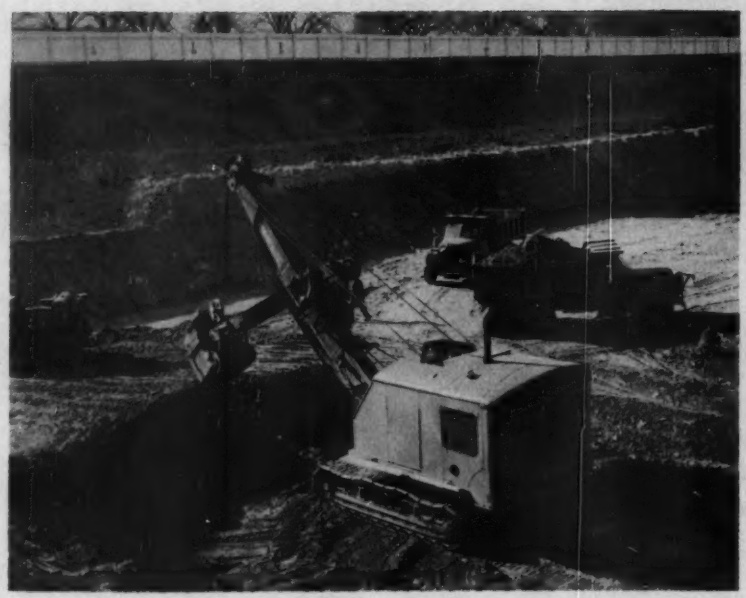


EXCAVATION—A Northwest 1½-yd shovel—one of three on job—scoops load of gravel for waiting haul truck. Subcontractor handles excavation totaling more than 200,000 yd.

They worked this problem out by setting up a 6-in. centrifugal pump in a test pit dug at the bottom of a 18-ft-deep hole scooped out for driving test piles. Original ground over most of the lot was at elevation plus 12; final subgrade elevation was about 10 ft below ground water level, at elevation minus 11. The test pit extended down to about elevation minus 10.

Timber sheeting held back the walls of the test pit. Gravel was backfilled solidly around the 10-in. discharge pipe. A wire mesh wrapped around the bottom of the pipe protected the foot valve.

Eleven tell-tales scattered over the lot at varying distances from the test pit checked on the drawdown of ground water when the pump went into operation. The tell-tales were 2-in. pipes set in holes bored with drill rigs. Slots staggered in rows around the circumference perforated the pipe and allowed water to seep in.

Picking the Pump

Results of the test convinced SW&P that a much smaller pump than the 3,000-gpm giant they had used for the experiment would handle the job easily. They decided to try a 75-hp turbine pump, of the type widely used in pumping out deep wells.

The plan called for sinking two shafts, one in the center of each half of the lot. One might have been enough, they now figure. But the union let them put on a single operator for both pumps, so they played it safe.

After starting the first shaft by excavating a 12-ft deep hole down to ground water elevation, the construction crew drove 26 pieces of DP-2 sheet piling in a 9x10-ft box. A Northwest 25 crane drove the piling and then excavated the shaft with a ½-yd clam. Two rings of bracing installed at 15-ft intervals were enough to hold the sides of the shaft. Depth of the shaft is 38 ft below water level.

Then the SW&P crew placed a 5x6-ft timber frame covered with a double layer of ¼-in. wire mesh inside the shaft to serve as a cage for the discharge pipe. Four 6x6 posts—one in each corner—form the backbone of the frame. Struts lacing the posts together are 2x4's on 2-ft centers.

Gravel fills the space between the timber frame and the sides of the shaft. After many sieve analyses of the subgrade material, SW&P engineers selected a gravel with good drainage characteristics. They came up with a gravel that would filter ground water and at the same time prevent fines in the subgrade material from washing out. Sizes in the selected gravel range from ⅛-in. up to ⅜ in. The ⅛-in. gravel plays the big role in keeping fines in the soil.

The contractor pulled the sheet piling when the gravel backfill was in place and started pumping. They placed the power plant of the rented 75-hp pump at elevation zero, the initial level of ground water before pumping. Pump impellers were near the bottom of the shaft at elevation minus 35. After pumping for one week, water level in the sump dropped almost 30 ft; and the tell-tales showed a drop in ground water of 7 ft a distance of 150 ft from the sump.

By this time the second shaft was ready for a pump. On the basis of the rented pump's performance, SW&P bought two Layne vertical turbine pumps, one a 20-hp model and the other 10-hp. By holding off purchase until they saw how the job went along and found out what they needed, SW&P saved on pump costs.

The pump in the second shaft (the 10-hp unit) is set at elevation minus 7. When it went into operation, the rented pump in the other shaft was replaced with the new one, set at elevation minus 9. At this stage, each pump averaged 600 gpm, going steadily 24 hours a day.

Water Level Drops

The two pumps working together soon lowered ground water level over the entire lot. Within a month, the tell-tales showed a drop in water level averaging 18 ft over the entire area. The drawdown curve, plotted from soundings, showed that the water level was about 1 ft higher for every 55 ft of distance from the sump.

With water down to where they wanted it, SW&P found they could cut down the 24 hour-a-day schedule and still maintain drawdown. Now they are operating the pumps only two shifts (16 hours) a day. Water rises about 2 ft during the layoff, but drops down again soon after the pumps start back to work. The pumps are now discharging 450 gpm.

The pumps will operate for about another six months—until all concrete piles and foundation slabs are poured. Then they'll shut down after a 10-month workout.

The dewatering system SW&P cooked up has worked out fine. The water pumped from the shafts (and diverted to a nearby sewer line) is crystal clear. That means no fines are being washed

continued on page 159

Here's REACH and POWER
to Tackle Any Trenching Job...

The *New* JOHN DEERE 5-POSITION BACKHOE

Reaching out over 20 feet at ground level, digging below 13 feet, dumping at a height of 11 feet, working closely to buildings or fences—the new John Deere 51 Backhoe gives you the kind of working performance you need to speed work and cut costs. What's more, there's plenty of leverage and husky hydraulic power for digging in hard or frozen soil.

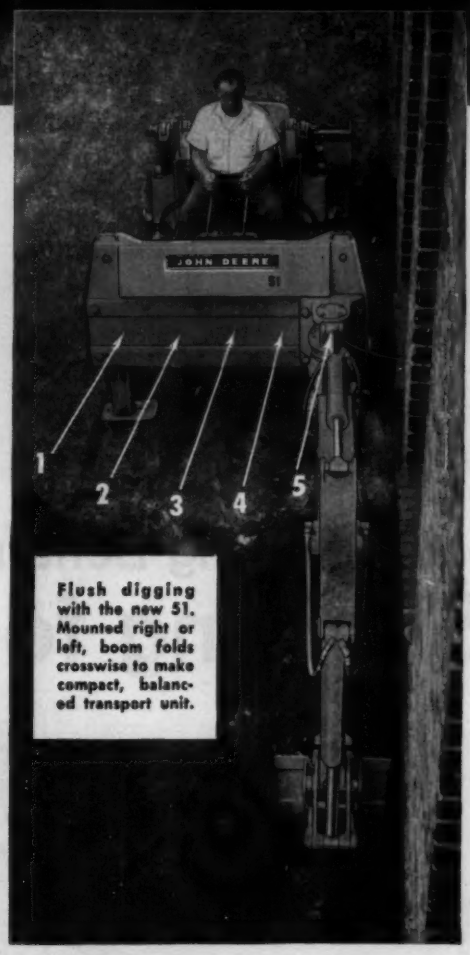
And it's responsive, easily controlled digging power—just two control levers to operate.

FAST CHANGEOVER

Changing the mounting position of the boom and rotary cylinder is amazingly easy. One man with a wrench makes the switch to any of five spots on the mounting pad in 15 minutes!

For the complete story, see your John Deere industrial dealer. Send coupon for free literature.

The center-mounted John Deere 50 Backhoe has boomswing of 205 degrees, 20-foot 3-inch reach, and digs as deep as 13 feet 6 inches.



Flush digging with the new 51. Mounted right or left, boom folds crosswise to make compact, balanced transport unit.

JOHN DEERE Industrial Tractors and Equipment

Completely Engineered for Industry

SEND FOR FREE LITERATURE

JOHN DEERE INDUSTRIAL DIVISION
Moline, Ill. • Dept. D-19-U

Please send me your latest literature on the John Deere Crawler Tractors and Equipment, and information on the John Deere Credit Plan.

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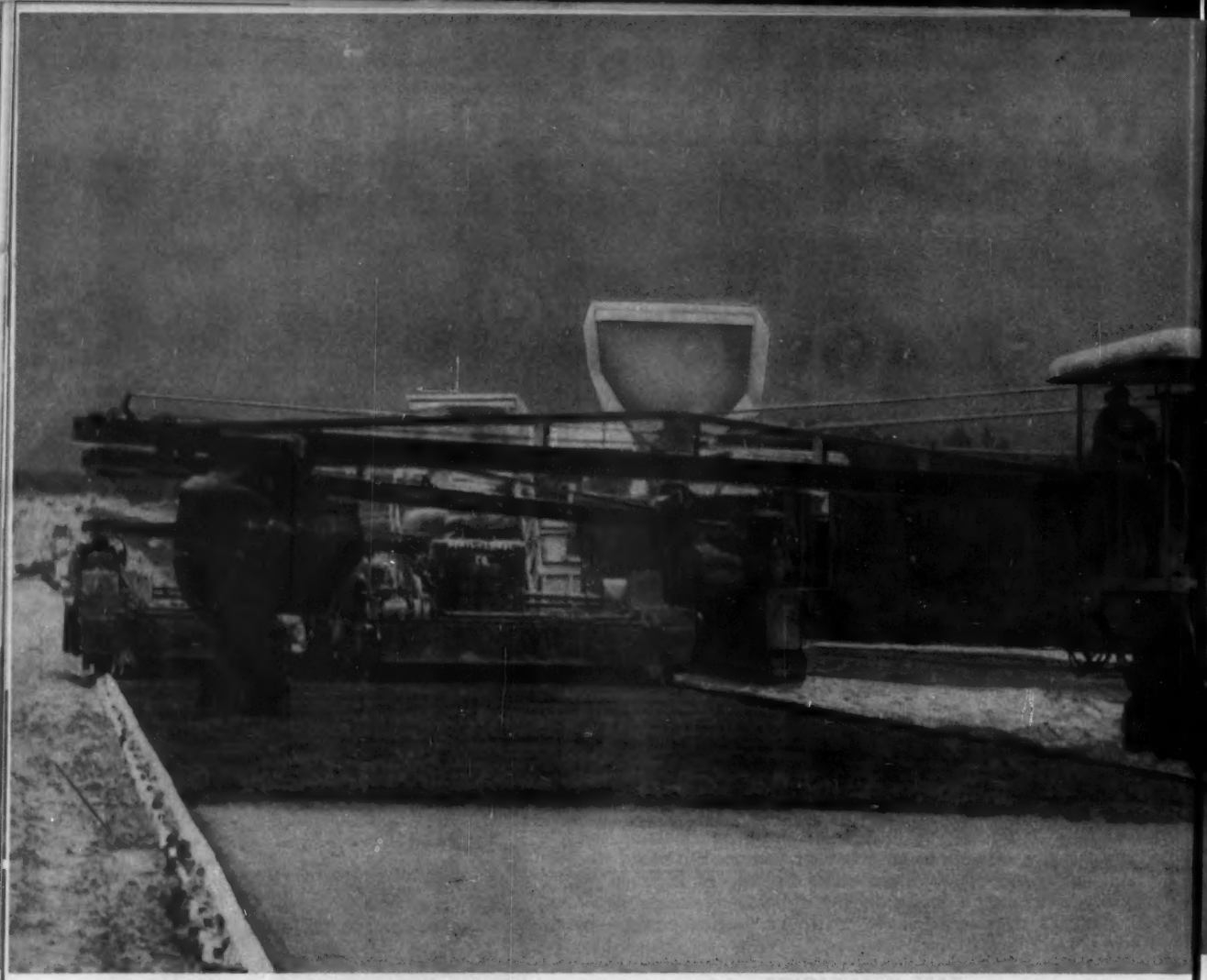

Record-holding Denton Construction Co. says:

"Shooting for paving records?

An efficient batch plant... plus Macks to carry the dry mix, means that Denton's pavers are always supplied for full-capacity operation. Says Denton: "We shoot for high-speed productivity, through a balanced use of the most efficient equipment. For important, heavy-duty jobs like hauling the dry mix—that meant Macks."

* * *

There are Macks, heavy- or super-duty, for every construction job: excavating... filling... equipment hauling... aggregate and materials hauling... concrete, dry-mix and asphalt hauling.

MACK
FIRST NAME FOR
TRUCKS

6526

6,029 feet of 9" x 24' concrete slab in a single day —a national record—was poured and paved last summer by Denton Construction Company in Michigan. Heading up the impressive array of equipment during this remarkable feat is one of the 5 Mack B-42S and 11 B-421S dumpers that Denton used to keep the paving machines going full blast.

better use Macks"

"Naturally," says Ed Denton, vice president of Denton Construction Company, Grosse Pointe Woods, Michigan, "Macks were part of the team when we made our record pour. But we didn't put Macks on merely to break records.

"Steady, flawless, high-speed paving on all jobs is our key to profits. This places a premium on an *uninterrupted* flow of dry mix to the pavers—our main reason for using Macks. But there are other advantages, too.

"Economy, for instance. Macks cost us less to own and operate. For one thing, their steady performance and perfect availability have allowed us to get along with fewer batch trucks—a big saving. And Macks stay in top condition for years with only routine attention—again we save money."

In short—Denton finds that Macks have what it takes—in work capacity, in performance, and in economy. So whether you're going after paving records, or whether you're anxious to improve your general profit picture, Macks will give you the best kind of start. Want definite proof? Ask your Mack branch or distributor for the names of local Mack users. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

A minimum number of Macks is needed to handle a big job... even when Denton is operating full speed ahead. According to Denton, "Two Macks, properly used, can outwork three other-make trucks of equal rating during the course of a season's operation."

Back and forth 25 times . . . Still no damage to Gold Seal!

That roller weighs 8 tons. The street is rough and stony. Yet, after 25 passes by the roller, no sign of damage could be found in the tube or carcass of Gold Seal air hose. The cover was not cut or bruised; stone marks quickly disappeared. If you anticipate extremely tough conditions on the job, or need air hose that will give long, continuous service, specify Gold Seal.

A. COVER: Extremely tough, resilient rubber; resists abrasion, cutting and gouging.

B. CARCASS: Braided steel wire for maximum strength and resistance to extreme impacts. Single braid of nylon cord to insure maximum bonding of cover to carcass.

C. TUBE: Synthetic compound to insure maximum oil resistance. Won't soften or flake.

Write Dept. D. for more information.

Acme Hamilton

Serving Industry Since 1870

MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

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TWO SUMPS DRAIN SITE...

continued from page 154

out of the subgrade material. So there is no danger of settlement, either of the building that will go up on the lot or of other structures in the immediate vicinity, because of voids created in the underlying soil by the dewatering.

Excavation

A subcontractor, Green & Dyer, handles the excavation. They have hauled more than 200,000 yd from the site, and excavation now is practically completed.

Three 1½-yd shovels, aided by an International HD-11 front-end loader, keep a fleet of 40 trucks busy on peak days. They average 3,000 yd per day.

Total volume of excavation will run slightly under the estimated quantity. Based on probable use of a wellpoint system, original calculations provided for a shelf cut into the sloping sides of the pit to accommodate the headers. The saving in excavation will be somewhat less than it might have been, however, because SW&P chose to have an additional 2-ft slice cut off below final plan subgrade. The extra depth carries the excavation down to the bottom of the pile caps, and so eliminates the hundreds of pot holes that otherwise would cover the lot.

Piledriving

The major portion of SW&P's foundation contract covers driving 2,800 steel bearing piles to support the columns of the building. The piles are 12BP53 sections, and they will penetrate to a depth below subgrade of about 53 ft.

Three Lima crawler cranes share the piledriving chore. One rig is equipped with 70-ft leads; the other cranes have 80-ft leads. Three Chicago Pneumatic 600-cfm compressors power the air-operated Vulcan No. 1 hammers. The 5,000-lb. rams deliver 15,000-ft-lb blows at a rate of 60 blows per minute.

Driving in the balky material is tough. It takes at least half an hour to drive a typical pile. The piles penetrate about 5 ft into decomposed rock. Resistance reaches 240 blows for the last 2 ft.

SW&P ordered piles for the job in lengths varying by 2-ft increments from 46 to 60 ft. Piledriving foremen select pile length for a particular spot according to their estimate of how deep the pile will go. They make first selections on the basis of test pile results. After a few piles they can tell pretty closely how long a pile they need. This way they keep field welding of splices—a time-consuming operation—to a minimum.

Bidders on the job were asked for prices on three different types of pile: thin shell, pipe, and steel bearing pile. On account of hard driving expected through the coarse gravel, the H-piles turned out cheapest.

The foundation phase of the job will be completed in a few months. In charge at the site for SW&P is superintendent Vincent Fahey. Hank Kramer is engineer.

THREE RIGS—Lima piledriving rigs lined up across lot in soldierly fashion tackle job that involves driving 2,800 steel bearing piles to average depth of 53 ft below grade.

DRIVING PILES—A Vulcan No. 1 air-operated hammer with 5,000-lb ram delivers a 15,000 ft-lb blow every second. Driving through gravel is tough; hammer is on pile ½ hr.

They said it couldn't be done!

1954

1955

1956

1957

1958

FIVE YEARS AGO Euclid started an intensified program of product improvement and development that was far beyond anything that had ever been done in the construction equipment industry. Always a leader in years-ahead engineering that made "Eucs" outstanding performers on the toughest jobs, Euclid anticipated your need for still larger, more efficient equipment to help beat the squeeze on profits.

Without tricky project names or slogans, the development program moved full speed ahead. New machines were put through exhaustive tests at Milford Proving Grounds and the General Motors Tech Center with its unsurpassed testing and research facilities. Then followed actual job operations on a wide range of work... under close check by Euclid product engineers so that further improvements in productive capacity and service life could be made. One by one, new machines were added to the Euclid line as their efficiency, design and reliability were established.

5 YEAR DEVELOPMENT

... most extensive ever undertaken

Now Euclid offers the most complete line of modern, large capacity job-proved earthmovers in the industry. Here's what has been accomplished in the past five years to provide equipment that enables you to bid more profitably:

5 new scraper models with capacities from 7 to 24 yds. struck... other models increased in power and capacity

4 new rear-dump haulers—12 to 35 ton capacities—with major improvements in performance of other models

2 new crawlers with a completely new design concept that provides unmatched work-ability ... TC-12 with Twin-Power is the world's most powerful crawler

No matter how small or how big the job, there's a Euclid model that will move yardage more profitably. Before you replace or add to your equipment fleet, get all the facts from your Euclid dealer. He can show you how Euclid's development program can mean lower earthmoving costs and a better return on your investment. EUCLID Division of General Motors, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

◀ **S-7** 9 yds. heaped

S-12 17 yds. heaped

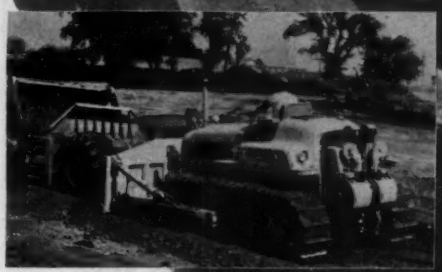
TC-12
▼ 402 net h.p.

S-18
30 yds. heaped

PROGRAM...

EUCLID

TS-24
32 yds. heaped



C-6
202 net h.p.

SS-24 32 yds. heaped

R-27 27 tons

◀ **S-12 RD**
22 tons

2 other models of 12 and 35 ton capacities

11 completely new JOB-PROVED earthmovers

GRADES WITHOUT STAKES—Preco automatic control normally operates only blade heel. But contractors have added guide wheel that serves as reference point for the toe. Because both cut and slope are under control, finish grading is done without stakes.

Blade Control Cuts Grading Time

"THIS UNIT ELIMINATED 80% of the grading stakes that normally would be required and cut finishing time by 30%."

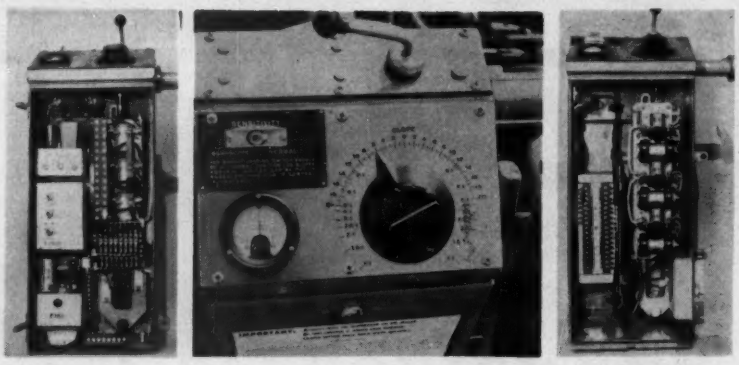
The above statement is from the California Highway Department's test report of a motor grader equipped with an automatic blade control device that finished one side of a 3,100-ft long section of divided highway. On the other side of the roadbed, a conventional grader was used to bring the slope to proper grade. The same man operated both machines; soil conditions and other factors were identical.

Not only did the grader with the automatic blade control do the job faster and with fewer passes, but it did it more accurately and with only one line of reference stakes. On this test stretch, the grader with the automatic blade control did its job in 11.5 hr as compared with the 24 hr it took the conventional grader to complete the section.

The automatic blade control is an electro-mechanical device that holds a constant cross section slope on the grader's moldboard. Manufactured by Preco, Inc., of Los Angeles, it is available for the Caterpillar No. 12 and 112 motor graders.

To operate the device, the operator selects the end of the motor grader blade he wants under automatic control by turning a lever on a compact console. He controls the desired transverse slope by setting a dial on the console. Then he is free to concentrate his attention on one end of the blade and the reference line.

When the device is operating, he has only one end of the blade to watch—usually the toe. Whatever correction he makes to the toe of the blade is made automatically at the heel as the blade



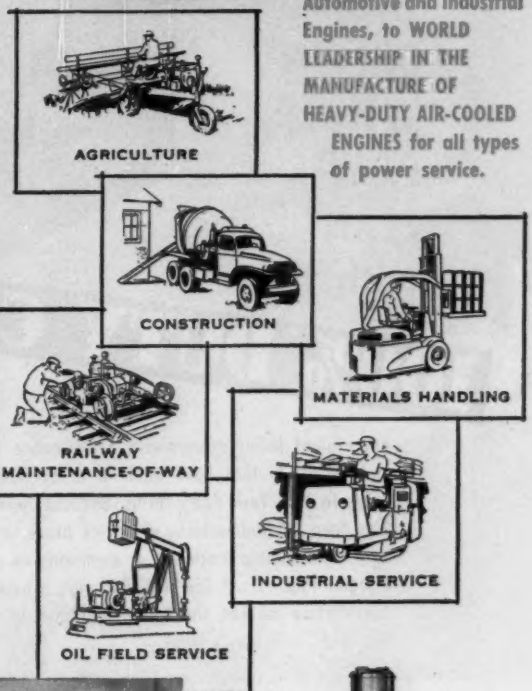
BRAINS—Operator dials desired slope on compact console. New transistorized model (right) has fewer parts, is quicker acting and more rugged than former model (left).

How YOU- can benefit from-

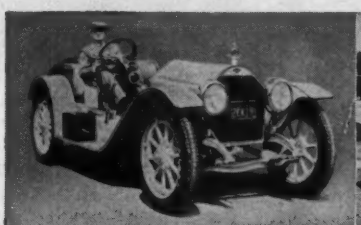
This year of 1959 is the Golden Anniversary of Wisconsin Engines. It heralds 50 years of continuous engine progress. Fifty years of engineering development and exclusive specialization in the design and manufacture of engines.

- From the very first, over a span of 50 years, Wisconsin Engines have been leaders in the internal combustion engine field from the standpoints of *quality* and *performance*... with direct benefit to *you* as a power user.
- Originally manufactured in a power range up to 200 hp., Wisconsin Engines helped to make automotive history as well as supplying dependable power for many industrial applications — service that called for the most advanced engineering.
- Heavy-duty design and construction and High Torque performance have been traditional features of *all* Wisconsin Engines. You get longer life from Wisconsin Engines and lowest cost maintenance.
- Today the Wisconsin line comprises the most complete line of Heavy-Duty Air-Cooled Engines in the industry. They are supplied in 4-cycle single cylinder, 2-cylinder and V-type 4-cylinder models in a complete power range from 3 to 56 hp. There is a Wisconsin Engine of the right size and type to fit the job and the machine.
- Every Wisconsin Air-Cooled Engine is designed for heavy-duty service under all climatic conditions from low sub-zero to 140° F. You get the *Most Engine* for your money for MOST HP. HOURS of service.
- For 1959 Wisconsin has available a complete line of factory-built LPG Engines (including conversion kits for field installation on Wisconsin gasoline engines). In addition, we offer a new line of heavy-duty, quality-built Vertical Shaft Engines, from 3 to 7 hp.
- More than 2000 convenient Wisconsin Authorized Service Stations stand ready to provide expert servicing and factory-built parts for all Wisconsin Engines.

Constructive experience is a priceless asset. The benefits to the manufacturer, distributor and user of power equipment are many. You are best served in all respects when you specify "WISCONSIN ENGINES"... *for better service, low-cost maintenance, trouble-free operation and long engine life.* Write for engine bulletin S-237.

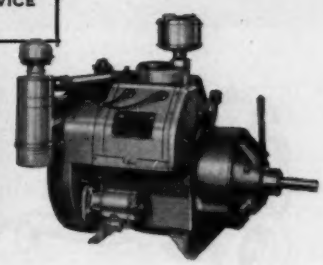


from water-cooled Automotive and Industrial Engines, to WORLD LEADERSHIP IN THE MANUFACTURE OF HEAVY-DUTY AIR-COOLED ENGINES for all types of power service.



This 1914 Stutz Bearcat, one of the most famous and rugged cars of its day, was powered by a Wisconsin Heavy-Duty Water-Cooled Engine . . . a power leader of high recognition even at that early date.

This FWD Wisconsin-powered truck, known as "No. 28," was purchased in 1921 from Army Surplus, and after many years of service is now on display at the Halliburton Oil Cementing Co., in Oklahoma.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

maintains it predetermined slope. The blade control holds the transverse slope, and the operator determines the cut.

The blade control device is designed specifically for finish grading. It is not recommended for use on rough or rocky terrain or where there is a heavy windrow of dirt to be moved. The unit works under these conditions, but it tends to loose accuracy. The blade also looses accuracy on tight-radius curves, but it can handle long radius curves without difficulty.

For finish jobs under normal conditions the device holds the grade within a maximum tolerence of ⅛-in. in 10 ft. In many applications it has reduced the time for producing finished grades by 50%; reduced the number of stakes required; eliminated the need for grade checkers; and produced a smoother, more accurate grade than any conventional grader.

The California Highway Department report states:

"The device is capable of carrying the required cross slope from one side of the roadbed to the other, including various intermediate slope changes such as shoulder breaks or center crowns. This allows one row of stakes to serve for both construction of the section and subsequent checking by the contracting agency."

Fewer Stakes Needed

Even on wide grades, only one row of stakes is necessary because the blade control device holds one end of the blade to an accurate, pre-set slope. Even on super-elevated curves, there is no need for intermediate stakes or grade checkers. After the first pass is completed, the operator's reference point for the blade toe under his control is the surface of the previous pass.

The automatic blade control also has other applications. The unit accurately holds the cut to a specified ratio for ditching or bank sloping jobs where the slope does not exceed 1½:1. On building pads, the blade control levels pads accurately and holds a true, flat grade.

On city streets it is possible to make a finish grade without using any grade stakes. Some contractors have attached a guide wheel or skid to the toe of the grader moldboard to serve as an accurate reference point. As the toe of the blade rides the gutter or form, the heel, which is under automatic control, cuts precisely to any desired slope. After the first slab of concrete is poured, the wheel runs on the slab and uses it as its new reference point. In this way, the motor grader can do the job frequently done by a subgrader.

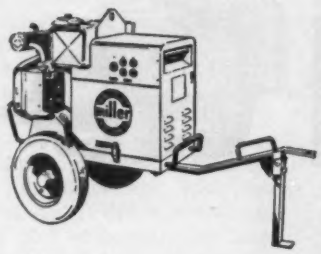
Transistor Version

Preco this month introduced a new version of the blade control that substitutes transistors and printed circuits for the former vacuum tubes. The new all-transistor model is said to be faster acting than the original model. It corrects any error in blade position before the grader travels 6 in. The transistors and printed circuits also make the unit more rugged and easier to service because they replace hundreds of component parts such as tubes, vibrators, relays, and switches.

THE ENGINE-DRIVEN WELDER/POWER PLANT with the

100% DUTY CYCLE

An original Miller design with performance standards, ruggedness and versatility that have made it a top hand from the Texas oil fields to New York dairy farms. Because, whether the AEA-200-L is hub deep in mud welding a derrick brace, or supplying power for lights and milking machines, or answering an emergency call aboard a repair ship. . . . IT DELIVERS. Currently a best seller in the highway construction market, the Miller AEA-200-L is handily the "finest in the field," and here's why:



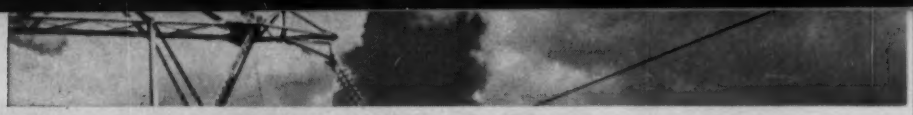
- All-weather construction
- Onan 12.9 h.p. air-cooled engine coupled directly to generator
- Full 225 ampere output
- 100% DUTY CYCLE
- 5 KW, 110/220v ac
- 1 KW, 115v auxiliary dc
- Uses any ac or ac-dc 1/16" to 3/16" electrodes
- Seven station amperage selection with continuous current control

Other Miller welder/power plants for metallic arc and TIG welding to 350 amperes.

Complete particulars will be sent promptly.

miller ELECTRIC MANUFACTURING COMPANY, INC., APPLETON, WISCONSIN

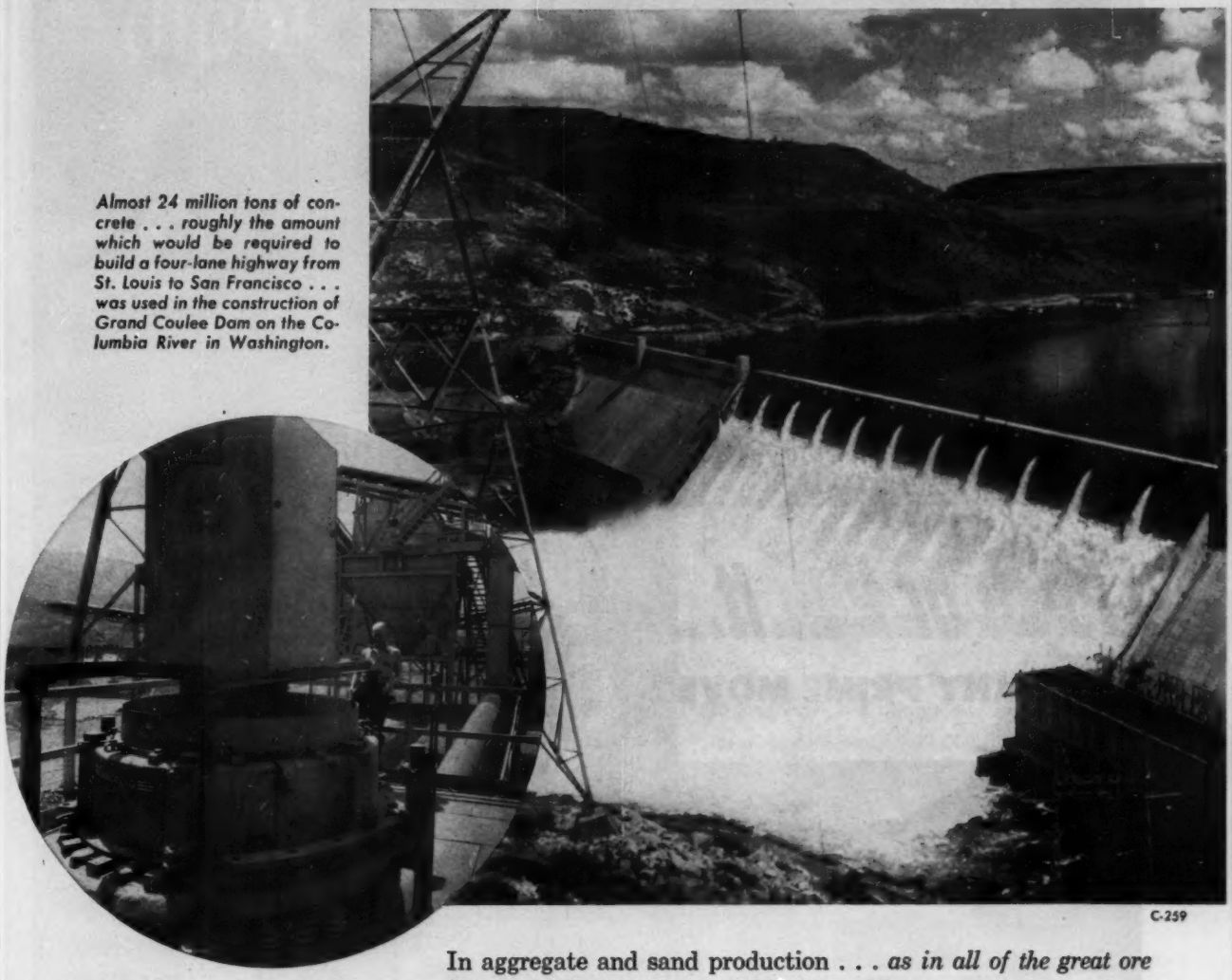
Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal



SYMONS® CONE CRUSHERS

FIRST CHOICE for big volume—low cost production of quality Crushed Sand and Aggregate

Almost 24 million tons of concrete . . . roughly the amount which would be required to build a four-lane highway from St. Louis to San Francisco . . . was used in the construction of Grand Coulee Dam on the Columbia River in Washington.



C-259

In aggregate and sand production . . . *as in all of the great ore and industrial mineral operations the world over* . . . there has been no record to equal the performance of Symons Cone Crushers that have so consistently and efficiently produced great quantities of finely crushed product at low cost.

Whether you are a contractor, operator, construction engineer, designer or manufacturer, it will pay you to specify and use Symons Cone Crushers for primary, secondary, or finer reductions, in capacities to over 900 tons per hour. Write for literature.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

NORDBERG

SYMONS . . . a registered Nordberg trademark known throughout the world

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS
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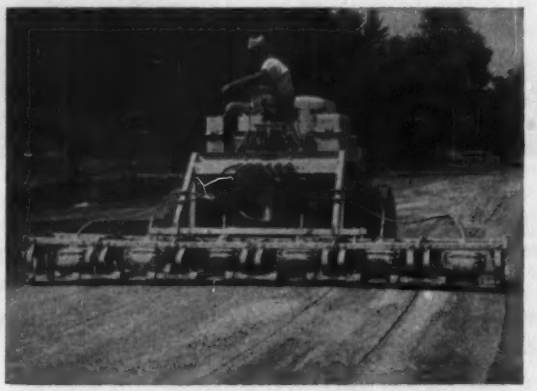
THE NEW JACKSON TRAILER COMPACTOR

Push or Pull it...

WITH *ANY PRIME MOVER



TEAMMATE OF THE FAMOUS **JACKSON MULTIPLE COMPACTOR** which was used exclusively for the compacting of sub-bases on the highly critical A.A.S.H.O. TEST ROAD and most all major highway projects. An excellent means of providing compaction at its quickest and best is offered in the choice of these two machines.

For the host of contractors acquainted with the outstanding performance of the Jackson Multiple Vibratory Compactor, the advent of the new TRAILER COMPACTOR will be great news. For here is a machine basically similar, costing considerably less, that can be PUSHED or PULLED BY *ANY PRIME MOVER CAPABLE OF SLOW (50 f.p.m.) WORKING SPEEDS . . . TOWED TO LOCATION AT ANY ROAD SPEED . . . OPERATED IN EITHER DIRECTION, NO TURNING OR BACKING NECESSARY . . . REMOTELY CONTROLLED BY OPERATOR OF PRIME MOVER. WORKHEAD MAY CONSIST OF 3, 4, 5, or 6 VIBRATORY UNITS, **(each developing 6,000 lbs. of force at 4200 RPM)** OR TWO WORKHEADS OF 4 UNITS EACH MAY BE EMPLOYED. INDIVIDUAL UNITS MAY BE DETACHED AND OPERATED SEPARATELY. POWER PLANT SUPPLIES BOTH SINGLE AND 3-PHASE 110-150 VOLT, 60-80 CYCLE AC AND HAS MANY USES.

Write, wire or phone for additional information.

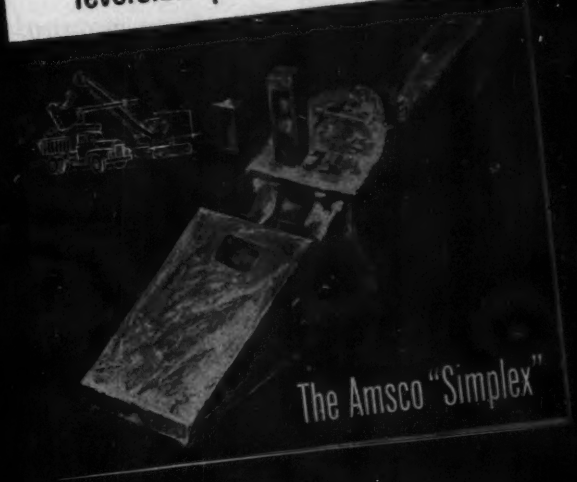
JACKSON VIBRATORS, INC. LUDINGTON, MICH., U.S.A.

Cut your dipper tooth costs up to 75%!

● BUYERS' GUIDE

AMSCO'S NEW 2 PART

reversible point dipper tooth



The answer... Amsco's new Simplex 2-part dipper tooth. On job after job, this new tooth design, made of a new Amsco alloy, is outlasting all competitive teeth 2-1, even 4-1 before reversal.

There is a Simplex for every power shovel . . . bucket, dipper or hoe . . . original equipment or replacement.

To help you to reach new highs in dipper-tooth service life and new lows in maintenance, AMSCO® has prepared this Buyers' Guide.

You'll find complete design and dimensional details on the Simplex that is *precisely right* for the working end of your shovel.

More than 125 power shovel models with bucket capacities ranging from ⅜ thru 9 yards are tabulated for quick, accurate selection.

Send coupon today for your free copy!

American Manganese Steel Division
Chicago Heights, Illinois

Please send me your Buyers' Guide for dipper teeth, side cutters and buckets.

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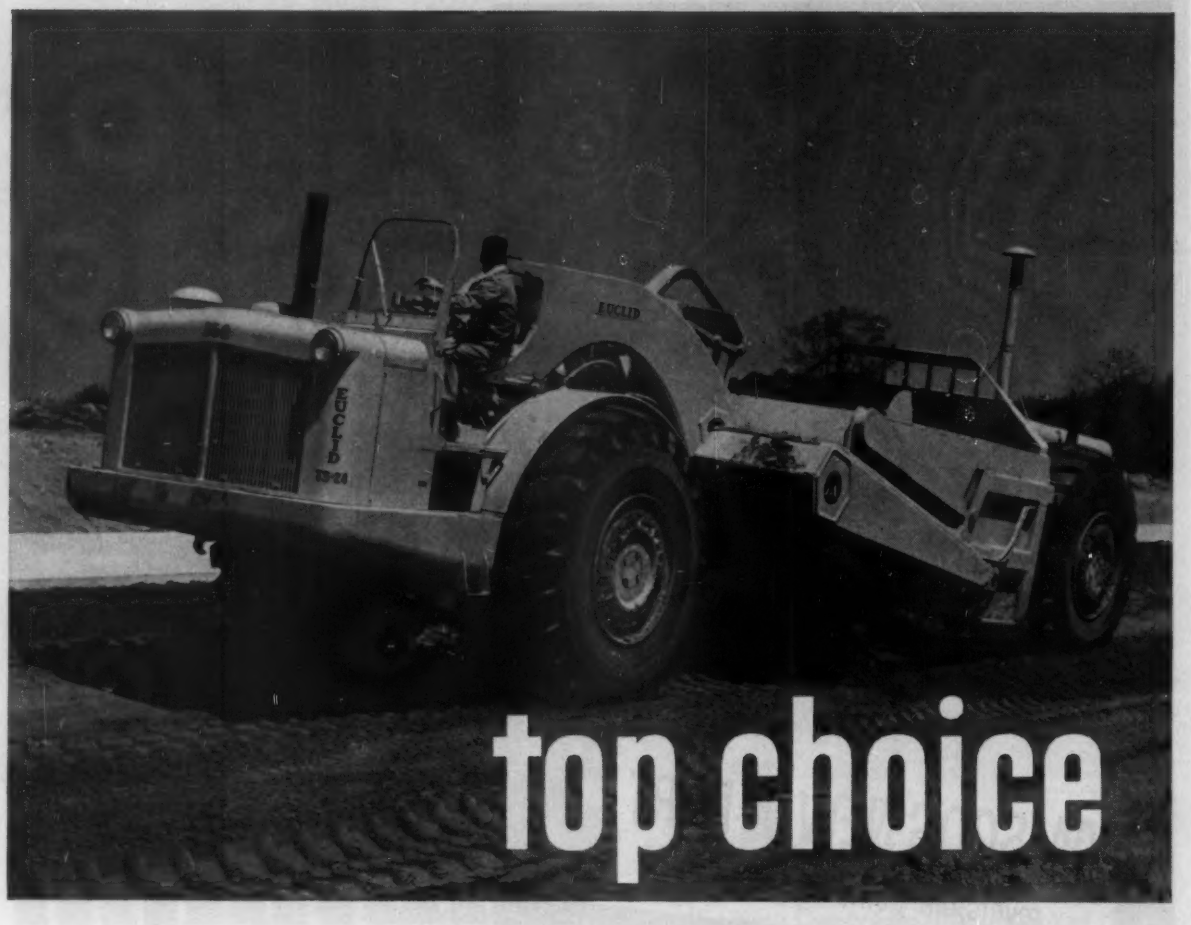
American Brake Shoe Company

AMSCO

American Manganese Steel Division
Chicago Heights, Illinois



where big jobs keep moving!

Firestone ***Perma-Tite*** *Rims*

New Firestone Earthmover Rims are 100% fusion-welded, 100% airtight for maximum tire life.

The exclusive Perma-Tite rim design insures a permanent air seal for absolute tire protection! Special fusion-welding helps make Perma-Tite rims the strongest you've ever used. Firestone Steel Products Company's balanced weld design gives equal penetration throughout the section. Stress tests assure rim reinforcement at high strain points. The truest rolling rim you can own—it gives 100% tire support, reduces sidewall flexing and lets tire run cooler for longer service. Specify Firestone Perma-Tite rims as original equipment; buy them as replacements. They're available for tubeless or tubed off-the-highway tires.

SPECIAL PROTECTION against rust and corrosion for longer rim life, better tire performance.

INTERCHANGEABLE in complete units or by components with all Earthmover rims and parts.

COMPLETE AIR SEAL insures retention of air at recommended pressures, delivers longer tire service.

FIRESTONE STEEL PRODUCTS CO. *Akron 1, Ohio*

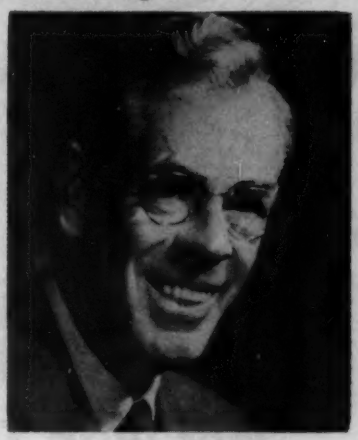
INTEGRITY, ACCURACY, QUALITY, DEPENDABILITY

Construction Men in the News...

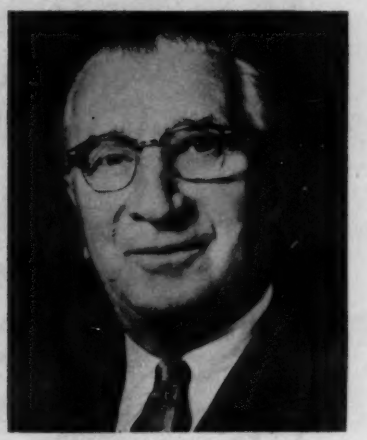
Beavers Honor Eight Industry Leaders

THE BEAVERS, an organization of western construction men, presented awards to eight leaders in the field for "outstanding contributions and service" at its fourth annual Golden Awards dinner in Los Angeles. Honored were:

In Management

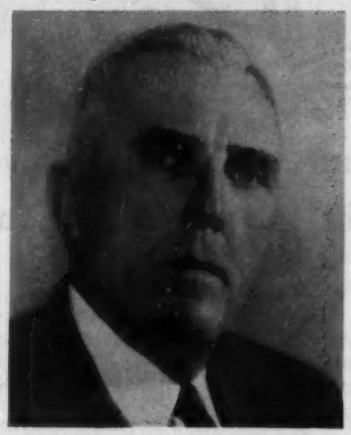


L. E. DIXON



JOHN MacLEOD

In Supervision



H. E. CARLETON

O. S. McCORMICK

In Management

L. E. Dixon, president of the L. E. Dixon Construction Co., and John MacLeod, president of Macco Corp.

Dixon started in construction as a laborer at the age of 18. He became an estimator, then moved up to a position as chief engineer and managing director of the Edwards, Wildey & Dixon Co. Later he organized his own firm. Some recent projects of his include Narrows Dam in Arkansas, Allatoona Dam in Georgia, and Chief Joseph and Rocky Reach Dams in Washington.

MacLeod was born in Scotland and immigrated to Canada in 1912. He was general superintendent of the Canadian Pacific Railroad's Tie and Timber Department at the age of 28. He later became a superintendent for the William Simpson Co. and shortly after organized the Macco Corp. In 1932, MacLeod plunged into heavy construction with the building of San Gabriel Dam 2.

He has served as national president of the Associated General Contractors of America and currently is on the national advisory and finance committees of that organization. He also was one of the founders of the Beavers.

In Supervision

H. E. Carleton, vice president of A. M. Coker Construction Co., and O. S. McCormick, construction manager of Al Johnson Construction Co.

Carleton started in construction as a rod man for Great Northern Railway. By 1906 he had accumulated several teams and pieces of earthmoving equipment and started taking tunneling subcontracts. In 1927 he was appointed general superintendent of West Construction Co. and later became president. When West was sold to Morrison-Knudsen Co., Carleton remained for a while as a tunnel construction supervisor, then joined A. M. Coker as vice president, a position he still holds.

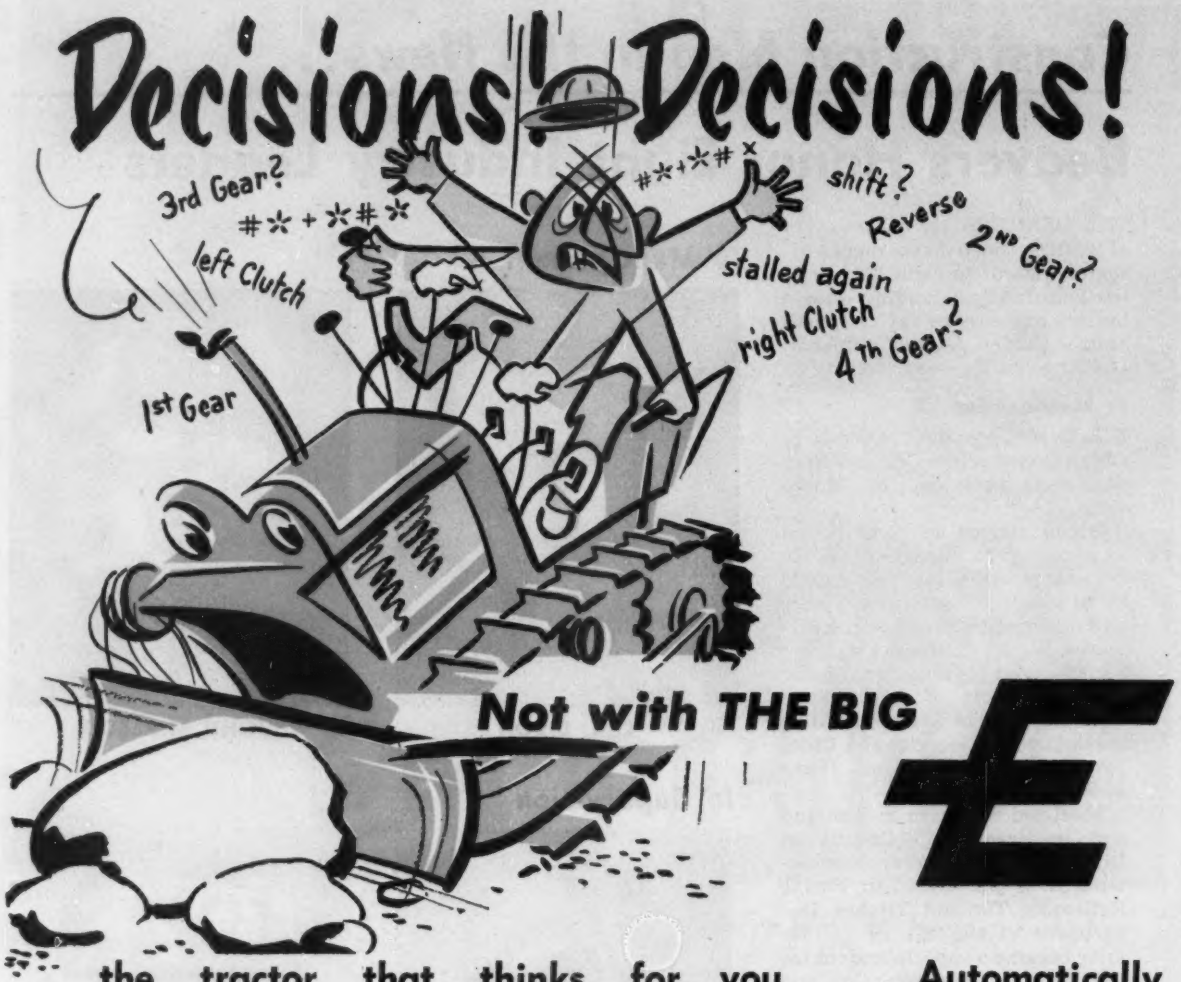
McCormick joined Al Johnson Construction Co. in 1930 and now is vice president. During his career he has supervised river dredging, deep foundation work, dam and tunnel construction. Notable among his projects are Possum Kingdom Dam in Texas, Fort Gibson Dam in Oklahoma, and the concrete structures of the Fort Randall Dam in South Dakota. During World War II he had charge of all building construction on the Burlington Ordnance Plant in Iowa and, during 1941 and 1942, managed all Corps of Engineers jobs in Newfoundland.

Other Awards

In Engineering: Charles P. Dunn, a vice president and director of the Morrison-Knudsen Co., and L. J. Sverdrup, president of several engineering firms.

In Supply: James L. Lovell, explosives department of DuPont.

Decisions! Decisions!



Not with THE BIG E

the tractor that thinks for you . . . . Automatically selects the right power ratio for any load or strain!

Just one of the many job-time and man-hour saving features of the modern Eimco 105 is the exclusive torque converter-Unidrive team, the only drive and transmission that is engineered with oil cooled, positive engagement clutches that never . . . really never . . . need adjustment. No master-clutch to wear out! No clutch pedal to push! No gears to shift!

You get a smooth, powerful drawbar pull or push that adjusts automatically, through an unlimited number of ratios, to the load and strain . . . even if the tractor is at a standstill! The Eimco 105 engine will never stall through the torque converter.

And you get all the other exclusive Eimco 105 features too . . . upfront full visibility operator location; dual final drives that set a new standard in maneuverability; simple controls that increases work efficiency and output.

Let an Eimco sales-engineer demonstrate the many advantages of the modern Eimco 105. Contact the sales office nearest you or The Eimco Corparation, P. O. Box 300, Salt Lake City 10, Utah.

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BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

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Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributor Appointments

Koehring Co.: The Buffalo-Springfield Roller Division has appointed McClung-Logan Equipment Co. of Baltimore, Md., and Sweeney Bros. Tractor Co. of Fargo, N. D., as distributors. The Parsons Division has appointed Cook Bros. Truck and Equipment Co. of Oakland, Calif., as sales and service headquarters for their Trenchliners in Northwestern California. The C. S. Johnson Co. Division has appointed the following four distributors: Jacobs-Kerr & Company of Denver, Colo.; G. C. Phillips Tractor Co. of Birmingham, Ala.; Texas Machinery & Equipment Co. of Amarillo, Tex.; and Paul E. Wiese of Columbus, Ohio.

Safway Steel Products Inc.: Aluminum Safety Products Inc. of New York City has appointed Safway as exclusive distributor of Aldek scaffolding and related products. Safway has offices and warehouses throughout the United States.

Worthington Corp.: Two distributors have been appointed. Bramil Pump & Supply Co. of Keene, N. H., will handle the Blue Brute pump line in New Hampshire. Mid-Continent Equipment Co. of Sioux City, Iowa, will handle Worthington construction equipment in the state of Iowa.

Diamond T Motor Truck Co.: The following seven distributors have been appointed: Don B. French and Associates of Walla Walla, Wash.; Diamond T Montana of Miles City, Mont.; Segal Truck Sales & Service, Inc. of Lafayette, Ind.; Collier's Truck Service of Uniontown, Pa.; Carolina Parts and Equipment Co. of Hampton, S. C.; Diamond T Truck Sales of St. Paul, Minn.; and Paling Motor Service of Hamilton, Ont.

continued on next page

They Only Look Expensive!

■ PATH surveying instruments—now introduced for the first time throughout this country by Bruning—not only look expensive but they outperform many higher priced instruments.

They have been added to the famous Bruning optical line because they offer one of the rarest surveying values available. They have been thoroughly tested and evaluated by experts in the surveying field.

The optics in PATH instruments are unsurpassed by any instrument in any price range! Japanese lenses, now recognized as among the finest in the world, provide superior definition, distinct and powerful magnification, unwavering accuracy. The instruments are built of the finest materials available under extremely high quality control standards. They have proved their dependability under extreme field conditions of heat, cold, and dust.

Bruning offers a complete line of PATH instruments, each with a handsome, sturdy wood carrying case equipped with adjustment tools, a plumb bob, magnifying glass, and sunshade. You'd be proud to own one, pleased with its performance, and delighted with its low price! Why not mail the coupon, right now?

PATH Surveying Instruments

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BRUNING

Bruning offers both PATH and BRUNSON surveying instruments—highest quality products available in their price ranges.

Charles Bruning Company, Inc., Dept 2-EE
1800 Central Road, Mount Prospect, Ill.
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Please send me specifications and prices for your new line of PATH surveying instruments.

Name_____ Title_____
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Just off the press- All about the Thoro System Products

You will want this for your reference file. A complete and concise 20 page brochure, showing treatment and correction for masonry construction.

Know these and many other products in our New Brochure. They are the answer to your maintenance problems.

Standard Dry Wall Products Inc.
NEW EAGLE, PA. CENTERVILLE, IND.

SALES AND SERVICE...
continued

Western Machinery Co.: The Wemco Division has appointed the following seven distributors for its aggregate producing equipment: Herd Equipment Co. of Oklahoma City; Butler Machinery Co. of Fargo, N. D.; Herman M. Brown Co. of Des Moines, Iowa; Southern States Equipment Co. of New Orleans, La.; Road Builder's Equipment Co. of Memphis, Tenn.; Equipment Supply Co. of El Paso, Tex.; and Bublitz Machinery Co. of Kansas City, Mo.

On the Sales Front

Clark Equipment Co.: William A. Keehn becomes special representative working with "Michigan" distributors throughout the country. John R. Horton has been named district representative for Ohio, Michigan, Indiana, and Kentucky. Robert J. Warren has been named field engineer for the Construction Machinery Division.

The General Tire & Rubber Co.: The following division managers have been appointed: Don E. Casterline, Dallas, Tex.; John D. MacArthur, Cincinnati, Ohio; and Gene A. Fuhrman, Philadelphia, Pa.

Armco Steel Corp.: The following appointments have been announced by Armco Drainage and Metal Products: James M. Thomas, Oregon state sales manager; James B. Rafter, assistant manager of stainless bar and wire sales; L. L. Williams, assistant division manager, Dixie Division; I. G. Tuttle, sales manager, Dixie Division; W. M. Black, state sales manager for North Carolina; C. B. Trueblood, senior sales engineer in the welded pipe sales department.

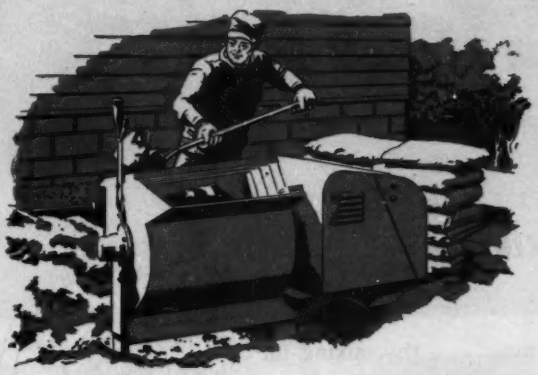
John A. Roebling's Sons Corp.: James R. Petrozzini has been made sales representative for the Construction Materials Division. His territory includes Chicago, St. Louis, Ontario, Michigan, Indiana, and Kentucky.

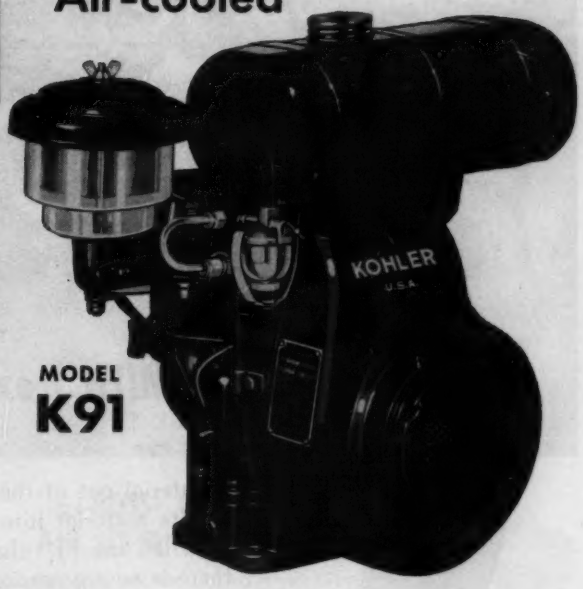
In the Main Office

Hercules Powder Co.: Five new members have been elected to the board of directors of the company. They are: Edward G. Crum, general manager of the Virginia Cellulose Department; G. Fred Hogg, general manager

KOHLER ENGINES

4-cycle
Short-stroke
Air-cooled





MODEL
K91

MODEL
K331

- **Conservatively rated, reliable. Kohler Co. has manufactured internal combustion engines for 38 years.**
- **Short stroke gives more usable power—cuts engine friction.**
- **Hot spark assures quick starting in all weather.**
- **Balanced crankshaft—ball bearings at both ends.**
- **Cylinder and crankcase are made of metallurgically controlled close grained cylinder iron.**
- **Mechanical governor for accurate RPM control.**
- **Rugged construction—plenty of lugging power.**

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FROM 3 TO 24 H.P.

KOHLER CO. Established 1873 KOHLER, WIS.

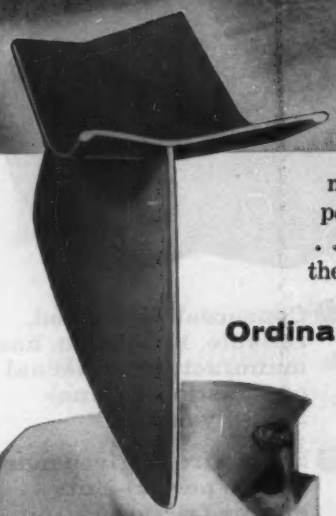
KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings • Electric Plants • Air-cooled Engines • Precision Controls

LOW SLUMP CONCRETE

delivered consistently by SMITH truck mixers

SMITH'S exclusive "T" blade lifts...



material out of the mass . . . the mixing fin pours material into the center of the drum . . . it's the "T" that mixes to the test . . . there is *no segregation* in the mix.

Ordinary "L" blade can't mix or pour efficiently . . .

because material slides off the blade as it comes out of the mass . . . there is no mixing fin to lift material into the center of the drum . . . churning instead of mixing action results.

discharges (low slump) concrete faster than any other truck mixer!

Actual job site data on yardage and discharge times available on request.

SMITH

Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers

THE T. L. SMITH COMPANY • Milwaukee, Wisconsin • Lufkin, Texas

Affiliated with Essick Manufacturing Company • Los Angeles, Calif.

SALES AND SERVICE . . .
continued

of the Naval Stores Department; Dr. John H. Long, general manager of the Paper Makers Chemical Department; Henry A. Thouron, general manager of the Synthetics Department; and J. H. Tyler McConnel, secretary of the company.

Pettibone Mulliken Corp.: F. R. Barth has been named vice president, finance to succeed Wade Meloan who has resigned. A. R. Gasiorek has been apointed assistant to the president.

The Yale & Towne Mfg. Corp.: Elmer F. Twyman, who has served as a vice president of the company since 1950, has been elected senior vice president. He directs the materials handling operations of Yale and Towne.

Associations

American Institute of Steel Construction: H. Buckley Dietrich, persident of Dietrich Brothers, Inc., Baltimore, has been elected president of the Institute. Other officers are: first vice president, James M. Straub, president Fort Pitt Bridge Works, Pittsburgh; second vice president, Harold G. Lewis, president of Flint Steel Corp., Tulsa, Okla.; secretary, M. Harvey Smedley, New York City; and treasurer, Erwin P. Stupp of Stupp Brothers Bridge and Iron Co., St. Louis, Mo.

International Road Federation: Julien R. Steelman, president of the Koehring Co., has been elected chairman of the board of directors of the Federation. Mr. Steelman is also president of the American Road Builders' Association but will relinquish this position shortly. He is former president of the Construction Industry Manufacturers Association.

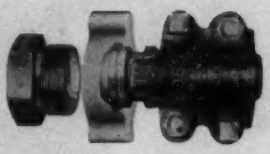
Special Mention

Sprague & Henwood, Inc.: A new, wholly owned subsidiary, Sprague & Henwood International Corp., will handle all export business of the parent company, formerly handled by Philips Export Co. The following officers were named: president, A. E. Ross; executive vice president, H. J. Longmore; vice president and treasurer, Paul Mertzweiler; and secretary, E. H. Norton, Jr.

These Couplings and Valves Are The Key...

TO STEADY JOB PROGRESS and PROFIT!

Wherever hose is used . . . for steam, air and water . . . you can insure against costly job delays due to leaks, blow-offs and pressure losses by relying on these quality fittings . . . leaders in the DIXON Line especially designed for construction and roadbuilding service.



Also available in Washer Type, Style W-16. Companion Male, Style MX-16.

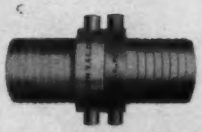
"GJ-BOSS" STYLE X-34 GROUND JOINT FEMALE COUPLING

The strongest, safest coupling made for pile driving, jetting, grouting, caisson, manifold and high pressure water and hydraulic hose connections. Leakproof, ground-joint construction eliminates replacement of lost or worn-out washers. Sizes ¼" to 6".

"GJ-BOSS" GROUND JOINT AIR HAMMER COUPLING

The unmatchable coupling for all heavy-duty air hose connections to hand drills, wagon drills, drifters, jumbos. Quickly connected and disconnected, with no lost or worn-out washers to replace. Compact and Heavy Types.

Also available in Washer Type. For lighter service: **"GJ-DIXON" & "DIXON"**



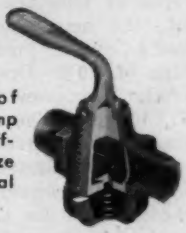
Made in regular and heavy patterns, sizes 1" to 8"

"KING" SHANK COUPLING

For all sizes of suction and water hose. Strong and durable, yet comparatively light in weight for easy handling. Absolutely uniform in quality, threading and dimensions, with deeply formed corrugations. Pin lugs on swivel.

"BOSS" SELF-HONING AIR VALVES

The right valve for the efficient control of air on compressors, manifolds, headers, sump pumps, etc. Strong, durable, compact. Self-adjusting, quick-opening, full flow. Bronze plug automatically hones to perfect seal against harder metal of valve body.



"KING" COMBINATION NIPPLE • "AIR KING" QUICK-ACTING COUPLING
"KING" SINGLE and DOUBLE BOLT HOSE CLAMPS

Stocked by Distributors and Manufacturers of Mechanical Rubber Goods

DIXON *Valve & Coupling Co.*

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA. BRANCHES—CHICAGO
BIRMINGHAM • LOS ANGELES • HOUSTON • DIXON VALVE & COUPLING CO., LTD., TORONTO
ASSOCIATE COMPANIES—BUCK IRON COMPANY, INC., QUARRYVILLE, PA. • PRECISION DRAWN STEEL COMPANY, CAMDEN, N.J.

Construction Equipment News . . .

New Caterpillar D8 Adds Power, Weight

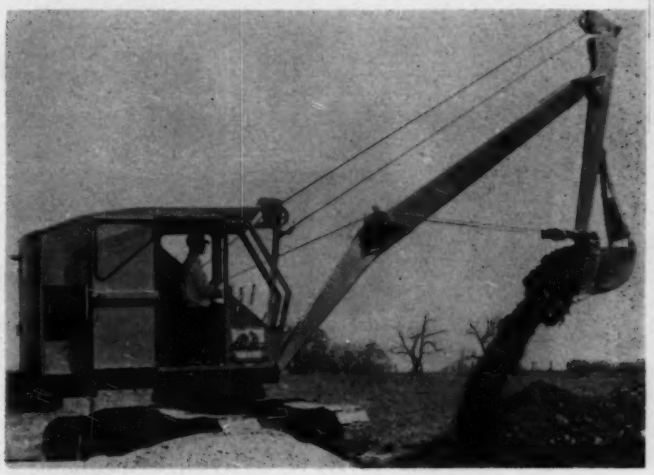
The new series H tractor, latest entry in the long and honored parade of Caterpillar D8's, offers more horsepower and weight, quicker torque rise, and faster dozing and reverse speeds than its predecessor. Tested on several types of jobs against an earlier D8, the new series H machine had an overall production advantage of 20%. Operating weight of the new crawler is well over 47,000 lb. The turbocharged, four-cycle, valve-in-head, six-cylinder Cat diesel is rated at 225 hp at the flywheel and 180 hp at the drawbar for the direct drive model. A torque converter model is also available. Standard 24 in. shoes provide a total ground contact area of 5,505 sq in. Ground clearance has been increased to 19⅞ in. Maximum drawbar pull for the direct drive machine is 52,250 lb. Top speeds are 6.3 mph forward and 6.4 mph in reverse. A dry-type air cleaner is standard equipment. Fuel capacity is 135 gal.—**Caterpillar Tractor Co., Peoria, Ill.**

Roller's Low Silhouette Increases Visibility

Bros' new SP-54B self-propelled pneumatic tired roller, which has a ballast range of from 3 to 10 tons, features a low-silhouette body design that increases operator visibility when rolling in restricted quarters. To the top of the steering wheel, the new roller is only 91 in. high. A new hydraulically powered steering system and hydraulically reversible clutch and transmission provide instant response for back-and-forth compaction jobs. Combined with a torque converter, the new transmission provides an infinite speed range from 0 to 20 mph. Gross engine rating is 73 hp. All four drive wheels have individual brakes.—**Bros Inc., 1057 10th Ave. S.E., Minneapolis 14, Minn.**

Allis-Chalmers Shows 21,540-Lb Grader

Allis-Chalmers expands its motor grader line this month with the introduction of the model 145, a medium-sized unit with many big-machine features. The 145 is rated at 80 hp at 1,800 hp and it weighs 21,540 lb. It offers six forward speeds ranging up to 20.3 mph and three reverse speeds up to 7 mph. Features include a maximum bank cutting capability of 90 deg with a 12-ft moldboard; a wide shoulder reach outside the front wheels; and a power-actuated, reversible circle turn. Powered leaning front wheels and 6,500 lb of weight on the front axle enable the grader to handle big moldboard loads without side thrust. Options include powered steering and a hydraulically shifted moldboard.—**Allis-Chalmers Mfg. Corp., Tractor Group, Milwaukee, Wisc.**



Schield Bantam Introduces Redesigned Excavators

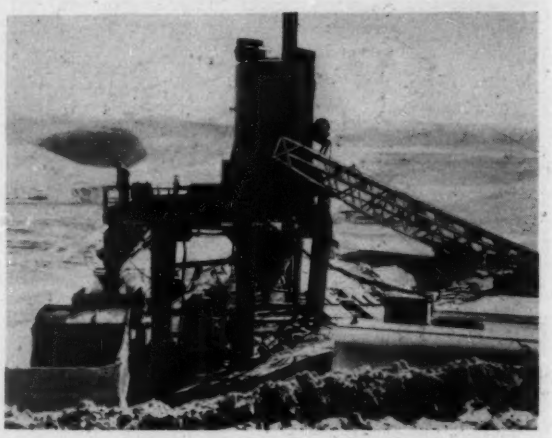
Schield Bantam has redesigned its line of ⅜-yd excavators and increased lifting capacities to 11 tons for the carrier-mounted and self-propelled models and to 8 tons for the crawler-mounted rig. Major changes on the new machines, called the series 350 Bantams, include a new turntable with a combination hook and trunnion roller design that takes fewer parts. It provides better load distribution and reduces maintenance requirements. Continental F-209 engines give a 14% power boost to the entire line. Diesel and electric power units and a two-speed transmission and torque converter are options. Controls are mechanical. The truck-mounted model is available on any of four Bantam-built carriers, including those with 6x6 or 6x4 drive. The crawler model (right, above) can be had with standard or extra long side frames. The self-propelled model (left, above) has 4x2 or 4x4 drive. Eleven new attachments are available.—**Schield Bantam Co., Waverly, Iowa.** *continued on next page*

Star of Reo's 1959 Line

Kingpin of Reo's 1959 construction truck line, the C-436 has an improved engine, power take-off, tires, and axles. The truck is powered by Reo's new six-cylinder engine that develops 185-hp at 3,400 rpm. The new pto for truck mixers, located behind the engine and in front of the transmission, weighs only 63 lb. Airplane-type tires for extra flotation in soft terrain are available. The C-436 has Timken axles and Henderickson suspension systems.—**Reo Div., White Motor Co., Lansing 20, Mich.**

New Wagon Crane Lifts 45 Tons

A 45-ton capacity wagon crane is the latest addition to the Marion excavator line. Called the 362, it carries up to 120 ft of boom, plus 15 or 20-ft jibs. Air controls are standard. The excavator mounts on a 20-ft 1-in. long, 12 1/6-ft wide Maxi carrier. Working weight is 111,700 lb. Power is supplied by either a General Motors diesel with straight drive or by a Caterpillar diesel with speed reducer drive. Torque converters are available for both engine models.—**Marion Power Shovel Co., Marion, Ohio.**

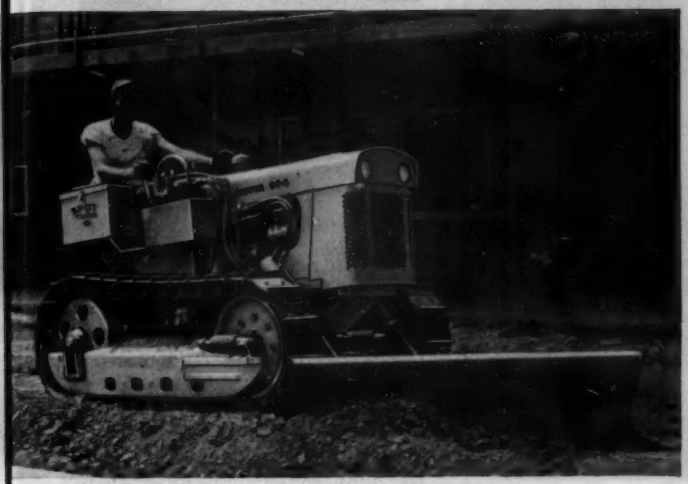


Pioneer Shows New Gravel, Stabilizing Plants

Pioneer's model 8C in-line, single-crusher gravel plant (left) includes a mechanical feeder and loading hopper, a 3x6-ft single-deck screen, 1024 jaw crusher, bucket wheel with 18-in. feed, and return and delivery conveyors. All units are mounted on a rubber-tired chassis. Fold back the conveyor and the unit is ready to be hitched up for travel. The revolving bucket wheel and the return conveyor attachment allows the plant to operate in a closed system that increases crushing accuracy. All units are driven by 40-60-hp engine. Another new Pioneer plant, the model 425 (right) for producing stabilized road materials, can be set up as a portable or stationary unit. Its twin-shaft pugmill with single-speed drive, a 350-gpm self-priming water pump, water meter and spray bars, and engine platform are carried on a heavy steel frame that mounts on legs or running gear. Rated capacity is 425 yph. Power requirement is in the 75-100-hp class.—**Pioneer Engineering, Minneapolis 14, Minn.**

continued on page 180

OLIVER



The OC-4 is ideal for dozens of jobs. It works perfectly with dozers and many other money-making attachments. It really gets around because it has more power and the highest ground clearance in its class. And there's a choice of four track gauges to meet your needs: 31″, 42″, 60″ and 68″.

The compact design of the OC-46 allows it to maneuver in and out of tight spots with ease. Long, 46″-wide tracks guarantee stability and positive traction. Side arms are rigidly mounted to the subframe to absorb shock and stress. Low loader arm mount and high seat give full visibility at all times. The OC-46 has a high dump and a long reach. Speed range, 1½ to 5¼ m.p.h.

Earn faster...with advanced "Spot-Turn" clutch steering on the OLIVER OC-4

With Oliver's advanced "Spot-Turn" clutch steering on the always dependable OC-4 crawler, you get smooth, almost effortless operation and the ultimate in easy maneuverability, safety, speed and comfort.

"Spot-Turn" clutch steering minimizes foot braking. Sharp turns or rightabout-faces are easily executed with a single-lever control that sets the *automatic* brakes at once! Pulling both levers (with one hand) stops the tractor *instantly*.

"Spot-Turn" helps you get any job done faster—with less fuel and muscle. Steering and control are always the same—on any grade, on smooth or rough terrain, with or without a load, pushing or pulling. Ask your Oliver distributor to demonstrate the OC-4 and OC-46 with advanced "Spot-Turn" clutch steering. Compare with others. See the difference.

The Oliver OC-4...*the "most-for-your-money" crawler in its power class*

The OC-4 is a compact, low-cost crawler offering the greatest value and performance in its class. And it's the only unit in its field giving you a choice of gasoline or diesel power.

This "little giant" offers more weight, a higher drawbar pull, perfect balance and the easiest control found in any crawler anywhere near its price. Every OC-4 has Oliver's exclusive "Spot-Turn" clutch steering and offers a selection of either "Travel-Reverser" or "Slo-Lo" auxiliary transmissions.

The Oliver OC-46...*faster, better loading due to its factory-built, matched design*

The OC-46 is a full-fledged, heavy-duty ⅝-yd. loader—engineered and factory-built as a compact, highly efficient unit. It's small enough to ride on a 3-ton truck and large enough to do a hard, money-making day's work.

With Oliver's advanced "Spot-Turn" clutch steering, it's tops in value. And you have a choice of proved gasoline or diesel engines, and "Travel-Reverser" or "Slo-Lo" transmissions.

OLIVER **THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors and matched allied equipment

Muck and mire doesn't faze Austin-Western's powerful all-wheel drive hydraulic crane—shown here doubling in brass to tow heavy compressor-trailer on Niagara Power Project.

Austin-Western hydraulic crane . . . construction project workhorse

"We haven't got a single rig on the job that is more all-around useful and hardworking than the Austin-Western hydraulic crane." That's what Fred Sebastian, project manager for Gull and De Felice Construction Co., Niagara Falls, N.Y., says about the A-W crane.

"All-wheel steering gives it plenty of maneuverability to get in and out of the tightest places, yet it has enough speed to work fast in a large area. We work it double shifts and have never had any maintenance problems with it.

Handles, tows, totes and maintains

"It's a real workhorse on this job. We use it for everything . . . as a materials handling crane, to tow or tote, to maintain other equipment, and even as a back hoe.

"Our operators like it too. They seem to do a better job with equipment which they like and which doesn't tire them out. It's easy to operate with precision because of instant response from the hydraulic controls."

The Austin-Western hydraulic crane is a versatile all-purpose 5-ton crane with 18-ft. telescoping boom. Full circle swing permits loading from front, rear or sides.

All-wheel drive and steering

All-wheel drive delivers plenty of power and traction for top performance under all surfaces and weather conditions. All-wheel steering permits an extremely short turning radius . . . maximum maneuverability. It is designed and built by Austin-Western to do more work with minimum maintenance.

Learn today why A-W crane owners are so enthusiastic about this versatile construction workhorse. Contact your nearby Austin-Western distributor or write us direct.

Austin Western 100th YEAR 1859 AUSTIN WESTERN 1959 PARTNERS IN PROGRESS

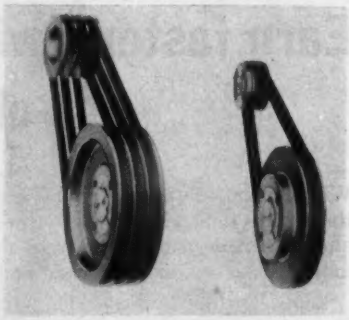
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

Protects New Concrete

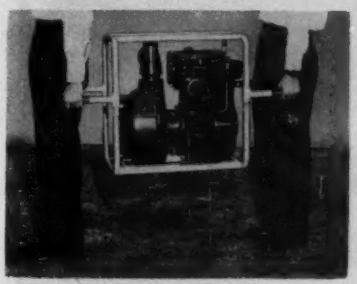
Fiberglas' new concrete curing blanket is a flexible, fibrous glass material that is bonded with a thermo-setting resin and enclosed in a tough black polyethylene film. It is available in 1 and 2-in. thicknesses in strips 42 in. wide and 50 ft long. Because of its light weight, the blanket is easy to put in place. It can be moved from pour to pour quickly and there is nothing to clean up after it has been moved. The new material is said to reduce water loss and to prevent harmful temperature variations on newly poured concrete. Any rips or tears in the material can be repaired with pressure-sensitive polyethylene tape. — **Owens-Corning Fiberglas Corp., Toledo 1, Ohio.**



Compact V-Belt Drives

A new line of V-belt drives that feature smaller and lighter sheaves and tougher belts than conventional models of comparable output have been introduced by Dodge. Called Dyna-V drives, models cover from 1 to 200 hp. Sheaves in the 3V series take from one to 10 ⅜-in. belts and 5V series sheaves take from three to 10 of the ⅝-in. belts. In the photo the drive on the right can transmit as much power as the conventional drive and it has one less belt and a smaller and lighter sheave. The New Dyna-V drives

are also less expensive. Besides being smaller in cross section, lighter, and stronger, the new drive belts are immune to stretching and they resist oil and heat damage. Dodge's patented Taper-Lok bushings for quick mounting on the shaft are a standard feature of the new drives.— **Dodge Mfg. Co., Mishawaka, Ind.**



Weighs Only 145 Lb

A new lightweight, self-priming pump capable of delivering up to 22,000 gph but weighing only 145 lb has been added to the Hale line of Torrent pumps. Called the 30-T, it features a new simplified self-priming design that eliminates troublesome check valves and suction hose foot valves. Impeller wear can be compensated for easily without dismantling the pump. The mechanical seal is self-adjusting and self-lubricating. The model 30-T is available with carrying handles (pictured) or mounted on wheels.—**Hale Fire Pump Co., Conshohocken, Penn.**

Three New Heaters

Three new oil-fired space heaters, rated at 125,000, 250,000 and 500,000 btu, have been introduced by the Muller Machinery Co. Significant design features include a screened burner nozzle that burns fuel completely and cuts down the danger from fumes; a preset burner head that requires no adjustment; burner electrodes and nozzle that are easily removed for cleaning; and large fuel tanks that permit the heaters to burn for 16 hr without refueling.— **Muller Machinery Co., Inc., Metuchen, N.J.**

continued on next page

A-W Roller-Compactor delivers vibratory and static weight compaction to 10-in. lift of stone base aggregates.

Austin-Westerns compact deeper, faster by static weight, vibration or both, to meet rigid compaction specifications

Austin-Western's Roller-Compactor combines the advantages of static weight and vibratory compaction to deliver economical precision consolidation of all type materials.

Rolls down, vibrates up

The basic 3-wheel roller unit of the A-W Roller-Compactor works from the top down. Three 240-lb. shoe attachments, vibrating approximately 2200 times per minute, work from the bottom up, filling voids and keying low level material for maximum compaction in fewest number of passes.

This roller-compactor operates at speeds up to 1 mph! Lifts of up to 12 in. of stabilized material can be compacted by successive passes without further costly surface preparation to meet density tests.

A-W 3-wheel rollers are unsurpassed for static compaction of practically all types of roadbuilding materials in lifts of 6 to 8 in. Large diameter smooth-faced steel rollers leave an even, sealed surface. Available in three variable weight models—8 to 11, 10 to 12, and 12 to 14 tons.

To roll a glass-smooth finish on macadam bases and asphalt or in surface smoothing operations, Austin-Western offers four models of tandem rollers. Weights are variable—5 to 8, 8 to 12, and 10 to 14 tons. Portable tandem model is 3½ to 6 tons.

Rugged dependability

From power unit to final drive, A-W compaction equipment is engineered for precision operation. A-W rollers are famous for rugged dependability, low maintenance.

Other features include hydraulic steering control with motor on or off; many parts interchangeable; oversize axles and antifriction bearings; gas or diesel power; choice of 2 or 4-speed transmission, torque converter standard with 2 speed, optional with 4 speed.

For full information about A-W compaction equipment, see your Austin-Western dealer today or write to us.

A-W Portable Tandem makes finish rolling easy, even up a hill and around a corner while keeping within ¼ in. of curb.

Austin Western — 1859 AUSTIN-WESTERN 1959 — 100th YEAR — PARTNERS IN PROGRESS — CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

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Power graders • Motor sweepers • Road rollers • Hydraulic cranes

JOB RECORDS PROVE

Firestones turn downtime into worktime profits!

Where the going is rough, records prove job-engineered Firestone tires give you extra hours of service! Cost-conscious contractors count on Firestones to keep *all* off-the-highway projects—from earthmoving to grading and hauling—rolling on schedule. Here's why—they're built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires! And Firestone S/F (Shock-Fortified) nylon and rayon bodies withstand bruising shock and impact for maximum tire protection. With treads engineered for every job, Firestone off-the-highway tires deliver the extra stamina, strength and pulling power that turns downtime delays into worktime profits! See your Firestone Dealer or Store and ask about the full line of Firestone tubeless and tubed off-the-highway tires and on-the-job tire service.

*Firestone T.M.

Firestone

BETTER RUBBER FROM START TO FINISH

When ordering new equipment always specify Firestone tires.

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Rock Grip® | Rock Grip Wide Base® | ANS Earthmover | Ground Grip® Wide Base | Super Ground Grip® Road Builder | Super Rock Grip Deep Tread | Super Mileage Lug Logger | Rib Excavator®

Shop Crane Takes Little Head Space

All-State's new jib crane is designed to provide a maximum amount of hoist travel in shops where overhead room is at a premium. Called the model WBFC, it has a capacity of three tons and a span of 20 ft. It rotates through 180 deg. The new jib crane can be mounted on existing building columns, if they are strong enough to take the load, or they can be furnished with supporting structures. The cantilevered 20-ft girder needs no tie rods or other types of bracing. Only 3 in. of clearance between the ceiling and the top of the girder is needed. The crane pictured is equipped with an electric hoist that is operated by remote control.—**All-State Engineering Co., Inc., 7050 N. 76th St., Milwaukee, Wisc.**

J. I. Case Previews Its New Line

Distributors from all over the country flew to Nassau in the Bahamas last month to preview the 1959 line of J. I. Case industrial equipment. Rigs that will be in production in the near future include a line of small rubber-tired tractors, three new rubber-tired tractor shovels, two new series of crawler tractors, and several completely redesigned rigs. Case also showed the prototype of the first of a new line of small and medium-sized scrapers—a tractor-drawn model with 6½-yd capacity. New crawler tractors include the models 420 and 520, both of which feature total-contact controlled-differential steering and four-roller tracks with upper support idlers. The model 520 (right, top photo) has torque converter drive—the only crawler of this size with this feature. Attachments include bull-dozers and angle-dozers that are operated hydraulically from the driver's seat. Three new additions to the Terraload'r line of tractor-shovels also were on view. These are the 1-yd W-5 and the soon-to-be-introduced 100-hp model W-10, with a 2-yd capacity, and the 120-hp model W-12, with a capacity of 2½ yd (Right, bottom photo). Redesigned versions of the models 600, 800, and 1,000 crawler tractors, all of which are equipped with Case's Terramatic transmission and torque converter drives, were shown with Case-built rear-hinged loaders and power angling and tilt dozers. Case revealed at the meeting that plans for two larger crawler tractors, in the 120 to 150-hp class, were on the drawing boards. Rounding out the new equipment were a new model 420 line of 47-hp rubber-tired tractors with torque converters, shuttle transmissions, power steering, and self-leveling buckets; and two new rubber-tired outdoor fork lift units.—**J. I. Case Co., Racine, Wisc.**

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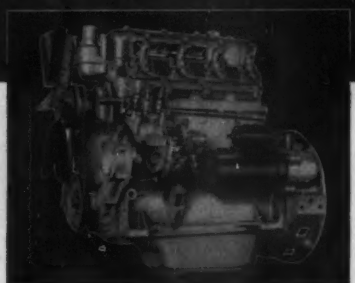
START *at the top* AND WORK DOWN



Waukesha Model 180-DLC Diesel—144 cubic inch., four-cylinder, 3½-in. bore x 3¾-in. stroke, counterbalanced crankshaft.

WAUKESHA *Diesel*

powers this

PAYLOADER®

When demolishing a multi-story, block long storage warehouse in New York City, the Cleveland Wrecking Company's *Payloaders* were taken to the top floor. From there they bulldozed, loaded and dumped all kinds of brick and rubble through floor hatchways down into the basement for later removal.

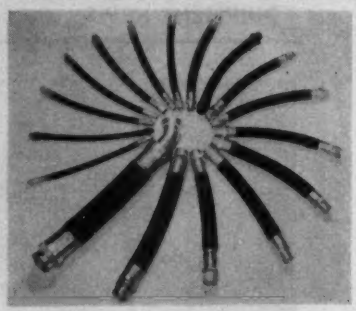
Pictured on the job is front-wheel drive, rear-wheel steer Model HA *Payloader* powered with a Model 180-DLC Waukesha Diesel—an engine with the lively acceleration and quick pick-up that gives tractor-shovel speed, flexibility, and all-around versatility, particularly in shorter turning. Model HA *Payloader* lifts 3000 lb. and carries 2000 lb. Its powerful 40-degree bucket tip-back has 3100 lb. of breakout force for prying out loads of heavy and lumpy materials. Its 180-DLC Waukesha Diesel is shown here; but it is also available with a Waukesha Model FC Gasoline Engine. Get Engine Bulletins 1626 and 846.

408

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

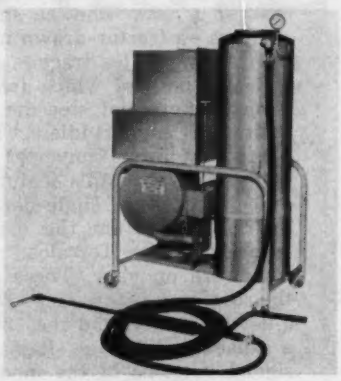
NEW YORK TULSA LOS ANGELES

Factories—Waukesha, Wisconsin, and Clinton, Iowa



Offers Wide Range

A new line of industrial hose assemblies with permanently attached ends is available from Parker. The assemblies, called Krimp-loks, complement the company's line of reusable Hozelok fittings and hose. The Krimplok line is available with a wide range of hose including wire-inserted woven rayon, rayon braid, steel wire single and double braid, and steel wire spiral reinforced hose for low, medium, and high-pressure hydraulic and pneumatic applications. Threaded-end fitting connections available include male pipe, swivel male pipe, 37-deg flare, 37-deg swivel nut, 45-deg flare, 45-deg swivel nut, and straight connections. Straight and angle four-bolt split flange end connections also are available.—**Parker Fittings & Hose Div., Parker-Hannifin Corp., 17,325 Euclid Ave., Cleveland 2, Ohio.**



Low-Priced Cleaner

Malsbary's new low-priced Handy Dandy steam cleaner is designed for shops that cannot economically use a big unit. It delivers 80 gal of solutions hourly at the same 60 to 100-lb of cleaning pressure delivered by larger Malsbary steam vapor cleaners. Two models are available—an oil-fired unit with caster mounting, or a gas-fired cleaner for sta-

New ROGERS Greatness IN SIZE AND VERSATILITY

Greater Value in Improved Conventional Trailers

It was logical for Hoffman Trucks, Inc. of Belleville, New Jersey, prominent among leading heavy movers, to come to Rogers Brothers Corporation for the design and construction of a most unusual trailer to meet their special needs. Its tremendous size is indicated in contrast with a Rogers 25-ton TVT top value trailer.

Conservatively rated at 200 tons it mounts 40-12x24-14 ply tires on axles which oscillate lengthwise and crosswise to equally distribute the load.

THE FRONT GOOSENECK rides on a dolly to increase the number of tires, improve maneuverability and absorb part of the load on the tractor. The trailer can be hauled with or without the dolly.

A self-powered hydraulic mechanism will raise or lower the deck for greater roadway or overhead clearance as required.

The unit at the rear supplies power for steering in addition to its use on the deck height and gooseneck removal.

THE DETACHABLE REAR ASSEMBLY consists of two — 8 tire double oscillating units with two removable 4 tire units attached to the walking beam. This places a total of 24 tires under the rear of the trailer.

The detachable axles are caster mounted to track with the trailer in forward movement. Power steering is applied to the caster axle for sharp turns or for steering in a reverse direction.

The detachable assembly and the front dolly may be removed for standard semi-operation.

To meet length limitations and permit faster return trips, a "Stub" connector is substituted for the regular deck which is carried on the goosenecks. This shortens the overall length approximately 30 feet.

GET THE ROGERS CATALOG *or request additional information if desired. If you have an unusual problem the advice of Rogers' engineers is available without cost or obligation.*

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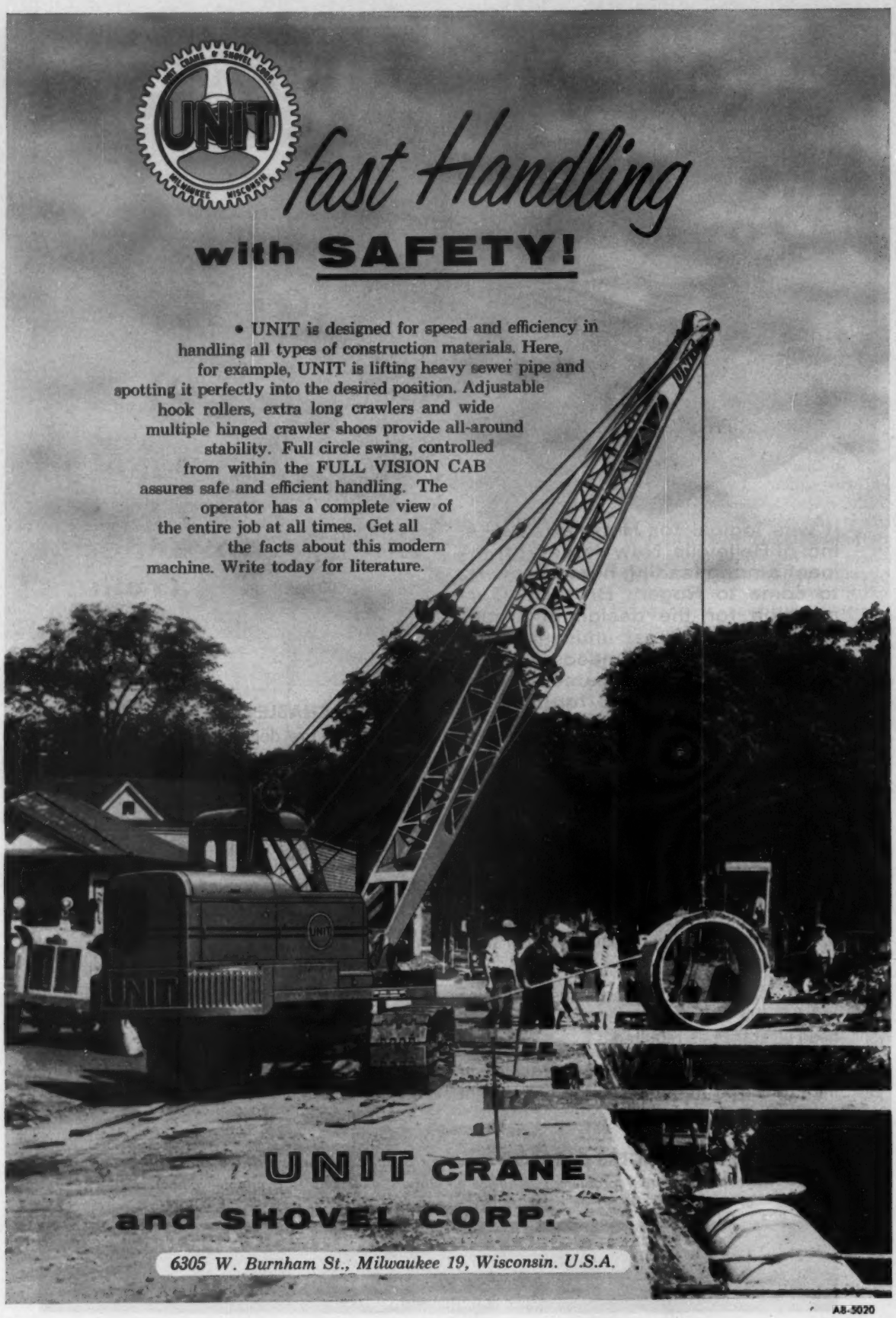
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fast Handling
with SAFETY!
• UNIT is designed for speed and efficiency in handling all types of construction materials. Here, for example, UNIT is lifting heavy sewer pipe and spotting it perfectly into the desired position. Adjustable hook rollers, extra long crawlers and wide multiple hinged crawler shoes provide all-around stability. Full circle swing, controlled from within the FULL VISION CAB assures safe and efficient handling. The operator has a complete view of the entire job at all times. Get all the facts about this modern machine. Write today for literature.
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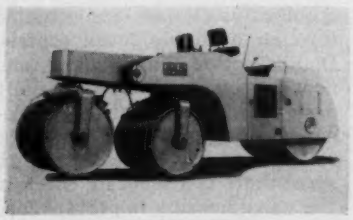
tionary installation. The cleaner has an air-atomizing burner that assures complete fuel combustion without smoke, soot, or fumes. The operator regulates cleaning steam by setting the burner control to the pressure he desires.—**Malsbary Mfg. Co., 845 92nd Ave., Oakland 3, Calif.**

Suspended on Rubber

International Harvester's new 13,000-lb capacity, six-wheel, low-bed trailer features an independent rubber-mounted wheel suspension system. The trailer is equipped with rubber-mounted torsion axles that act as combination springs and shock absorbers. Independent oscillation of each wheel enables the trailer to move smoothly over rough terrain. The suspension wheel design does away with metal to metal contact and cuts down on lubrication needs. The 2-in. wood deck of the trailer is surrounded by a welded angle frame that provides stability and balance for the bed. A ramp that speeds loading and unloading also serves as the unit's tailgate. A jack built into the hitch allows the trailer to be loaded when the towing vehicle is disconnected. The trailer is 8 ft wide, 21 ft long overall. It weighs 1,900 lb. Two, four, or six-wheel electric brakes are available as options.—**International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**



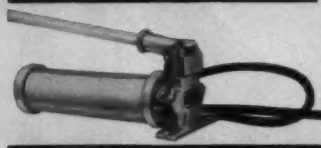
Now More Versatile

A hydraulic lifting cylinder for the walking beam of Buffalo-Springfield's KX-25E three-axle tandem roller is now standard

Push, Pull or Lift Safely with SIMPLEX

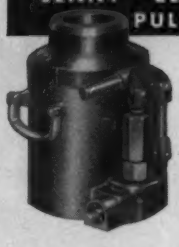
HYDRAULIC EQUIPMENT

RE-MO-TROL PULLERS



Hydraulic Pumps and remote-controlled Rams for pulling wheels, gears, shafts, etc.; also pushing and lifting in any direction from a distance. Safe, smooth, powerful. 10 to 100 ton capacity units. Unique Center-Hole simplifies rigging. Hand, electric, gas and air power pumps.

JENNY "CENTER-HOLE" PULLERS



Self-contained Hydraulic Pullers with famous Center-Hole for easy pulling, pushing, lifting. Rugged, versatile; 6 models, 30 to 100 ton capacities.

STANDARD HYDRAULIC JACKS

Sturdy, safe, efficient units to do any lifting job easy and fast. 8 models; 3 to 100 ton capacities.

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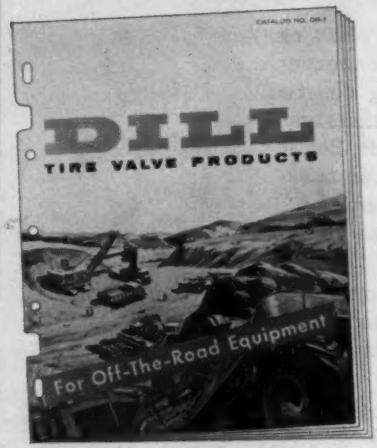

* Contains valuable information to reduce equipment downtime, cut tire maintenance costs!

* 16 pages of information about special off-the-road tube and tubeless valves, valve hardware, fittings, swivel-type valves, air-water valves, extensions, pressure gauges, valve tools . . . everything you could possibly need to service off-the-road tires!

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Only Ramset offers the exclusive "plus" of complete on-the-job fastening service for contractors. Complete Ramset training on the proper use of powder actuated fasteners and tools covers most construction needs. But, if and when special problems come up on selection of fasteners or fastening "know-how", Ramset experts will come right to the job site with the correct answers.

"On-site" service is another Ramset exclusive which has made this powder-actuated system the best known and most widely-used in all phases of construction.

For the name of your Ramset dealer look under "Tools" in the Yellow Pages, or write direct for further information.

In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set hammer-in tools for light fastening, and Ringblaster heavy-duty kiln gun.

Ramset Fastening System

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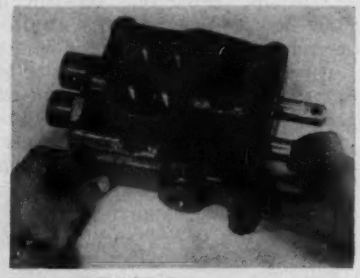
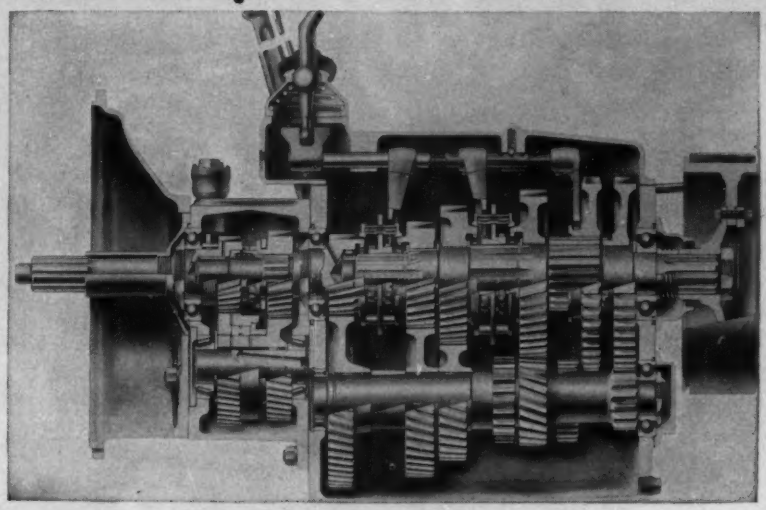
equipment. With this feature it is no longer necessary to depend on the terrain to position and lock the walking beam that carries the end guide roll. The operator now can raise or lower the beam at will. With the center roll raised, the roller can be used as a 13-20-ton, two-axle tandem. The long wheelbase arrangement places 1/3 of the weight on the steering roll and the remainder on the drive roll. By raising the end guide roll and by controlling the amount of ballast in the rolls, the KX-25E becomes a two-axle tandem that puts equal compression on both rolls. Hydraulic lifting cylinder kits are available so that the new attachment can be added to machines now in the field.—**Buffalo-Springfield Roller Co., Springfield, Ohio.**



Versatile Valves

A new line of hydraulic directional control valves for earthmoving equipment is available from Wooster Div., Borg-Warner Corp. The new units are rated at from five to 25 gpm and they are available with up to six operating spools. Models are available to handle operating pressures up to 2,000 psi. The open-center, parallel-circuit design of the Wooster valves permits independent or simultaneous operation of cylinders and hydraulic motors. Multiple cylinders and hydraulic motors can be run off a single multi-spool valve. Valves are actuated through a simple lever control. Double-acting, single-acting, and float-type spools have specially designed notches that allow precise load positioning, holding, raising, or lowering. For each spool there is a separate check in the valve housing to prevent load drop when spool operating positions are changed. The body of the valves are machined from high tensile, semi-steel castings. Inlet and outlet ports are located on either side of the body and op-

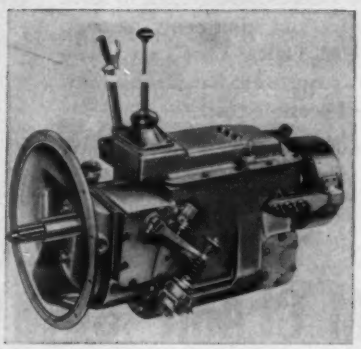
TORQUE TALK FROM CLARK® EQUIPMENT



NEW CLARK SEMI-AUTOMATIC TRANSMISSION CUTS GEAR SHIFTING

To fulfill transmission needs of highway trucks, Clark's Automotive Division has developed the "StepMatic"—a new, semi-automatic, heavy-duty truck transmission. Designed to minimize shift lever and clutch pedal manipulation, and to reduce the need for skilled gear shifting, the StepMatic is an integrated combination of a five-speed synchronized transmission and an auxiliary gear train. This auxiliary unit is composed of a direct and an underdrive gear set, which are automatically engaged. The underdrive gear ratio "splits" the geared steps of the transmission—as a result, the StepMatic has ten closely-spaced gear ratios with five semi-automatic shifts.

In normal operation of a StepMatic equipped vehicle, driver selects the gear that gives him optimum engine operation . . . resulting in substantial fuel economy, as well as savings in engine and transmission wear. Then, as conditions warrant, he obtains additional gear reduction and power instantly, by "floorboarding" the accelerator pedal or by pushing a button on the dashboard (or shift lever) as arranged to suit the truck builder's option. This shifts the auxiliary into underdrive, providing additional reduction. The auxiliary automatically returns to "direct drive" when the driver eases up on the accelerator pedal. Simple and compact in design and operation, the ten-speed unit is currently available in two sizes (325 lbs. ft. and 425 lbs. ft. torque ratings) to meet most highway truck needs.

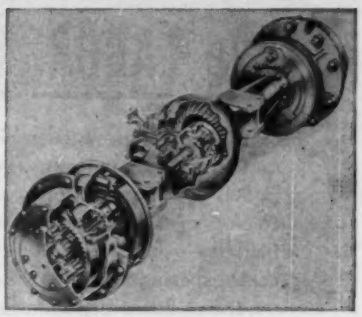


NEW POWER TRAIN FOR START-STOP SERVICE

Clark Equipment Company's new TransVerter transmission is ideal for such equipment as house-to-house delivery trucks, buses, garbage trucks and various types of construction machinery which must start and stop at frequent intervals. Operational advantages include elimination of engine stalling and lugging, sharp reduction in gear shifting, and fine inching control by simple throttle manipulation. The TransVerter can be installed by O.E.M. without major redesign of line.

NEW LINE OF AXLES FOR OFF-THE-ROAD EQUIPMENT

A new line of planetary drive and drive-steer axles especially for heavy-duty, four-wheel drive vehicles, is now offered by Clark. Use of these planetary-type drives at the hubs puts final power multiplication as close as possible to point of application. It also



makes possible a substantial size reduction in the steering joint, axle shafts and differential—without any sacrifice in strength.

Other advantages include: elimination of torsional wind-up in the drive shaft which may cause vehicle to "surge"; added operational safety because of the low torque load on differential, ring gear, pinion and drive shaft.

FOR FURTHER INFORMATION

. . . and full details on any of Clark's automotive components, simply address a card or a call to:

CLARK EQUIPMENT COMPANY
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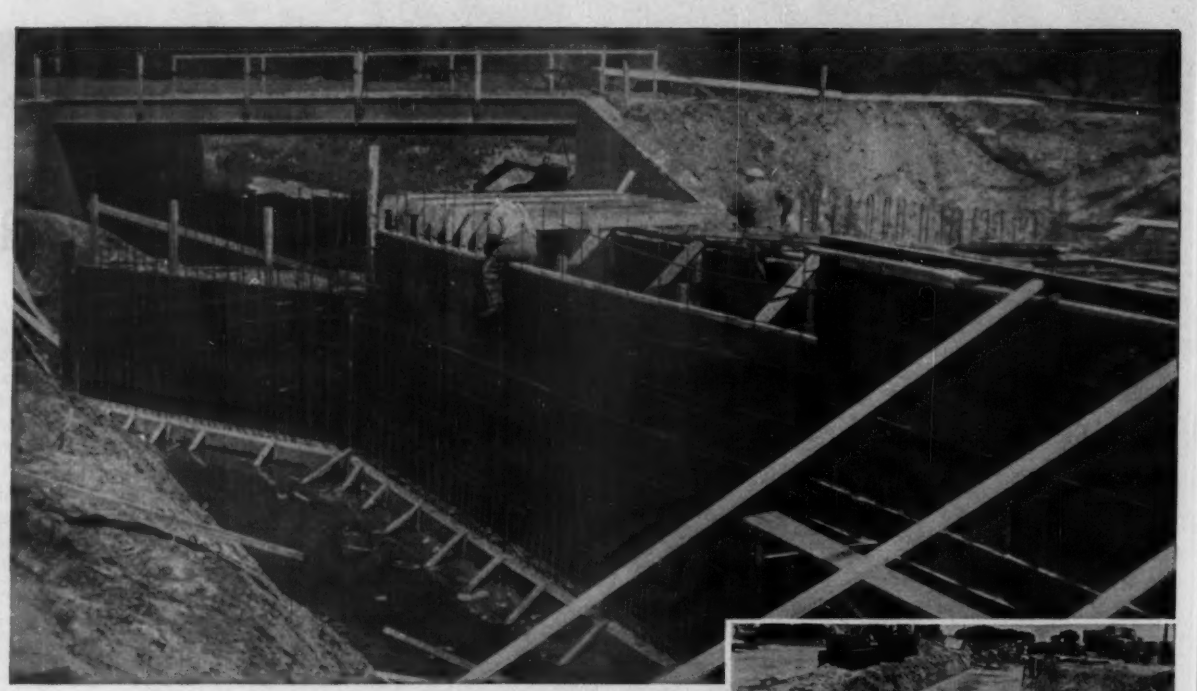
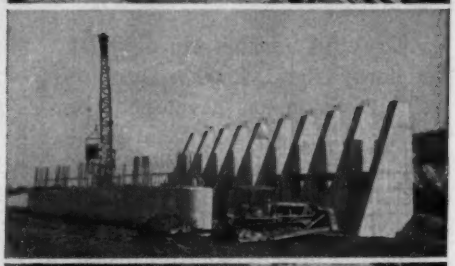
TransVerter and StepMatic are trade-marks of Clark Equipment Company





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Here Are The Basic Elements:

2. UNI-FORM Tie

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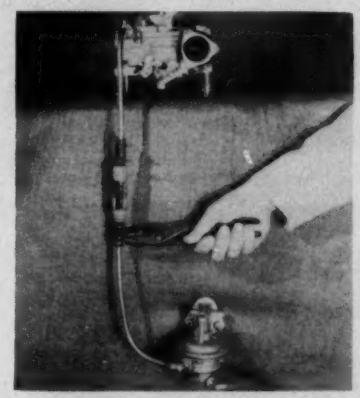
1. Steel framed, plywood faced UNI-FORM Panel

posite each other on standard valves. Provisions for alternate port locations are made by including pads in the tops and bottoms of the valve castings.— **Wooster Div., Borg-Warner Corp., Bedford, Ohio.**



Keeps Gasoline Clean

A ceramic and magnetic gasoline filter that is installed directly into the fuel line of any gasoline engine has been introduced by the Carter Carburetor division of ACF Industries. The in-line filter takes out harmful dirt and iron oxide particles and prevents clogging, flooding, and stalling. It comes with hose fittings and clamps to simplify installation. When the filter becomes clogged by foreign material, a built-in bypass pressure relief valve passes enough gasoline to run the engine until the filter—which is disposable—can be replaced. The unit has a magnetic trap that catches iron particles. — **Carter Carburetor Div., ACF Industries, Inc., 2840 N. Spring Ave., St. Louis 7, Mo.**

Works Without Bearings

Pacific Mercury's new concrete vibrators utilize low-amplitude, high-frequency vibration similar to that employed by sound equipment. This new design is said to offer the user several advantages, including the fact that no bear-

PAYLOADER® versatility

with Vibratory Compactor

Substitute this Galion Vibratory Compactor attachment for the bucket and your PAYLOADER becomes an economical and efficient tool to develop specified densities in all types of granular soils. Whether used in new construction, resurfacing or patchwork, high PAYLOADER maneuverability permits working in extremely close quarters where other units can't operate.

The compactor consists of four 30-in. shoes that provide a total compaction width of 10-ft. Each shoe, powered by a separate electric motor, delivers from 3,600 to 4,200 three-ton blows per minute. Shoes may be removed for manual operation.

No other tractor-shovel comes close to matching the wide selection of useful, interchangeable attachments available for a 4-wheel drive PAYLOADER — real working tools that *save time* on-the-job and the *high cost* of special one-purpose machines. And because a PAYLOADER travels anywhere under its own power, it handles many scattered jobs in a single day to multiply versatility even more. See your nearby Hough Distributor for complete details.

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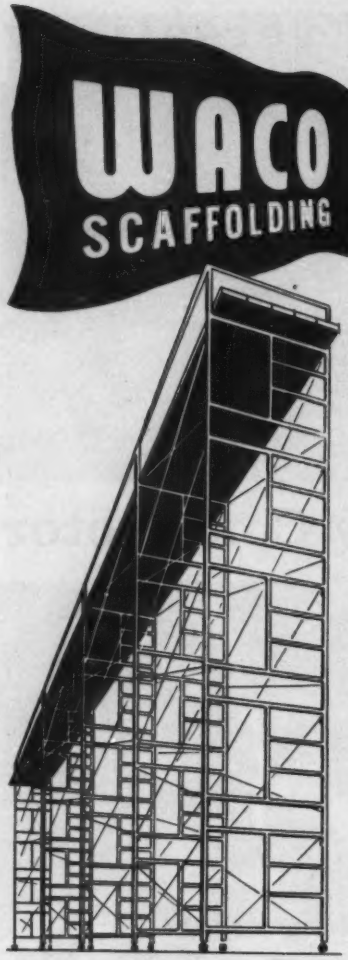

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ings are needed in the vibrating device. The concrete vibrators are available with two basic motor sizes and with either 1½ or 2½ in. dia heads. Casing is available in seven, 14, or 21 ft lengths. The motors are contained in the heads of the vibrators. With the new design, no eccentric load is applied to the motor, nor is a flexible shaft used.—**Pacific Mercury Construction Equipment Div., 14,052 Burbank Blvd., Van Nuys, Calif.**

Cummins Powers Rotary

Worthington now offers its 600-cfm portable rotary compressor with a model NH-220-BI Cummins engine. The new unit features Worthington's over-under design that puts the first stage compressor cylinder directly over the second stage. It has self-draining cylinders and two filters. The new Cummins engine is a four-cycle, six-cylinder model that produces a maximum 203 hp at sea level. With the Cummins diesel and mounted on four 7:50-16 tires, the compressor weighs 9,200 lb. It is 13 ft 7 in. long, 6 ft 10 in. wide, and 8 ft 1 in. high. It has an oil bath air cleaner and pneumatic controls.—**Worthington Corp., Holyoke Div., Holyoke, Mass.**

Power Plus Welder

Lincoln Electric's new combination ac power source and arc welder serves as a 5-kva power supply and a 200-amp ac welder. Called the Weldanpower, the new

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2 engines—518 total h.p.
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2 Torqmatic Drives
NoSpin differentials
27.00 x 33 tires (33.5 x 33 optional)

The Euclid TS-24 Scraper can help you beat the squeeze on profits because it's the most versatile and most productive scraper in the field. Two engines, each driving an axle through separate torque converters and semi-automatic transmissions, provide maximum usable horsepower at all times. The "Twin" can self-load and move big loads out of soft or sandy borrow pits and over steep grades. With "no clutch" Torqmatic Drives, NoSpin differentials, and fast-acting, independent hydraulic controls, the TS-24 is easy to operate and has unequalled maneuverability.

Performance records from a wide range of work . . . from small jobs where one or two scrapers must handle all the earthmoving without supplementary equipment . . . to big yardage projects where the "Twin" is teamed with the Euclid TC-12 Crawler for high speed production . . . show that the TS-24 provides a big cost advantage.

The Euclid dealer in your area will be glad to give you details on the complete line and show you why ***Euclids are your best investment.***

EUCLID Division of General Motors, Cleveland 17, Ohio

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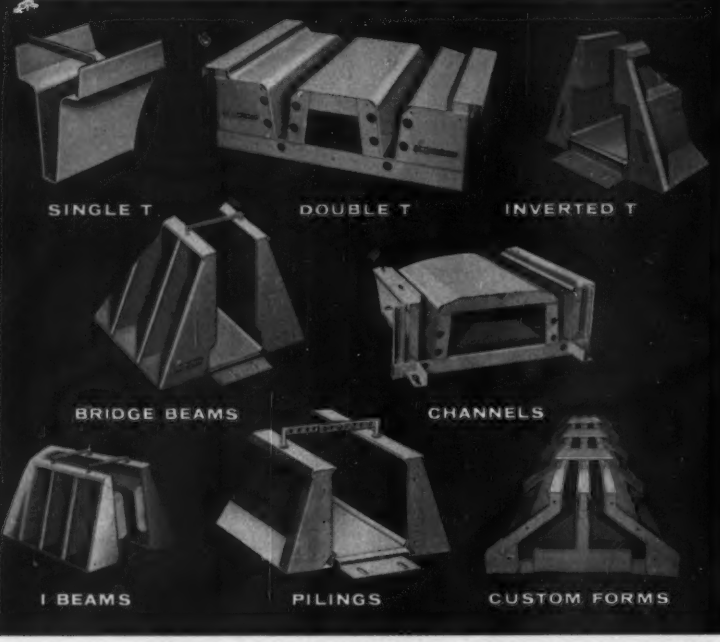

THE FORM-CRETE line of more than 22 basic forms represents the most versatile group of steel forms ever produced for casting prestressed and precast concrete products. Each form has been carefully designed to insure a uniform, smooth edge product. Die-formed product release angles permit easy trouble-free stripping of product. Heavy-gauge steel construction means indefinite form life. What's more, many Form-Crete forms can be quickly adapted to produce a variety of varied finished products. And where special needs call for a custom form, FMC has the know-how and facilities to turn it out quickly and efficiently. That is why we say, call on Form-Crete, rely on Form-Crete for the finest in steel forms delivered on time, when and where you want them.

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machine is powered by an air-cooled, four-cycle Wisconsin engine that delivers 13.1 hp at 2,000 rpm. The unit provides 115 or 230-v, 60-cycle, ac single-phase power. Four 115-v receptacles and a 230-v receptacle are located on the centrally located control panel. Designed especially for maintenance welding and hardfacing, the machine supplies 20 to 300 amps of ac current. It can handle 5/64 through 3/16-in. electrodes. Separate windings for the welding and power circuits make it possible to weld and supply power at the same time. The compact, 537-lb machine can be carried easily in the back of a truck or station wagon. Electrodes and ground cables, head shield and lenses, electrode holder, and ground clamp are included in the price of the machine (about $780). Undercarriages for road towing are available as optional equipment.—**Lincoln Electric Co., Cleveland 17, Ohio.**

Light Concrete Buckets

A new series of lightweight Johnson concrete buckets in ½, ¾, 1, 1½, and 2-yd sizes are designed with all their working parts above the discharge point and well within the bucket outline to protect them from falling materials or accidental impacts. Both frames and hoppers are fabricated from all-welded steel. A short-stroke geared handle that operates the gate assembly can be worked with one hand. When the handle is in the closed position it fits within the bucket outline. The

ESS PAVER resurfacing 15 miles of U. S. Highway 70 south of Huntington, Tennessee. Warren Brothers also used Blaw-Knox Wideners on their portion of the $1,200,000 act. Express Paver is laying upwards of 1,000 tons per day in a 1½ inch layer. Job Superintendent Bragg is shown at left and General Superintendent Duckworth at right.

We're 50% ahead of schedule because of the speed f this Blaw-Knox Express Paver"

"Despite the difficulty of this particular mix, our Blaw-Knox unit is laying up to 142½ tons per hour. Although we've had weeks of bad weather, we're 50% ahead of schedule on the maximum 250-day contract time," says R. F. Bragg, Job Superintendent on the Warren Brothers project.

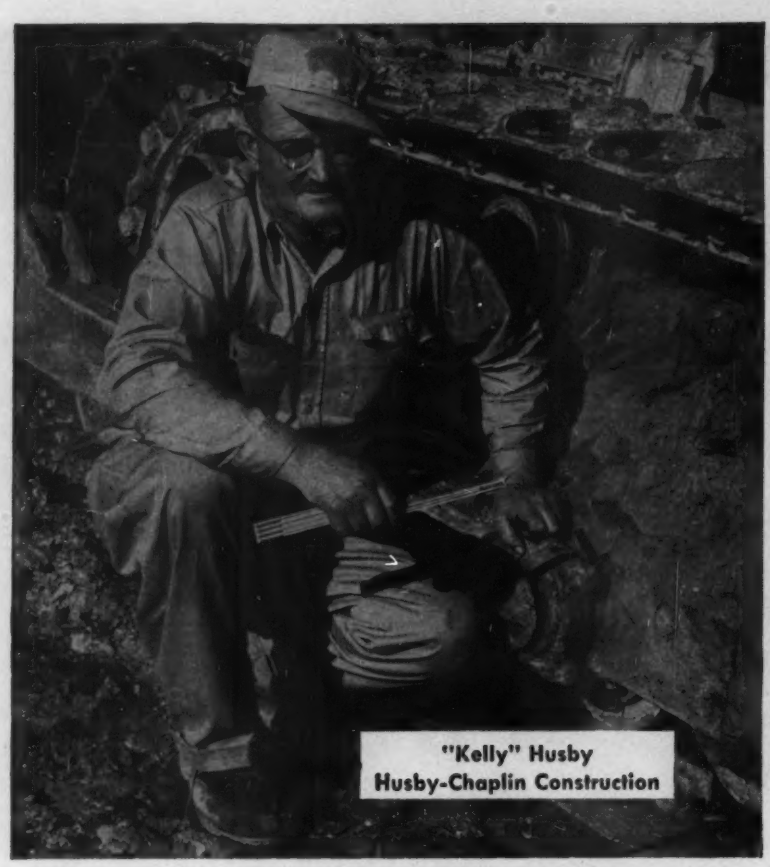
"The quality of roadway is superior to that layed by crawler-mounted equipment. And the Blaw-Knox longer wheelbase reduces waves in the pavement that are sometimes felt when driving over asphalt roads laid by shorter wheelbase pavers. Rubber tires make it possible for us to work faster in completing the major moves that the machine makes, and it paves up to 20% more in the same amount of time," adds Ray Duckworth, General Superintendent.

Here is another instance of proved advantages —faster, better quality paving with freedom of movement—that contractors everywhere are experiencing with the new Blaw-Knox Express Paver. See your nearest Blaw-Knox Distributor for a technical report on this project, or write direct. There's no obligation, of course.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment
300 Sixth Avenue
Pittsburgh 22, Pennsylvania



"Cut track overhaul costs? Sure! We're having our tracks done on a new OTC 'Trackmaster' track press which doesn't broach the pin bosses!"

"We expect about twice as much life out of each set of rails," says Clarence E. "Kelly" Husby, partner in the Husby-Chaplin construction firm in southern Minnesota, "because the OTC 'Trackmaster' hydraulic track press does not ruin the pin bosses, and we can keep rebuilding the rails. And this saves us money! As far as 'downtime' is concerned, there is another saving . . . because we get our tracks done faster, and keep our machines working."

SAVES MONEY IN OVERHAUL

Like contractor "Kelly" Husby, you can save money by having your tracks re-pinned on the new, fast OTC Trackmaster press. Ask your track repair man.

Write for additional information on OTC's new "Trackmaster" hydraulic track press:

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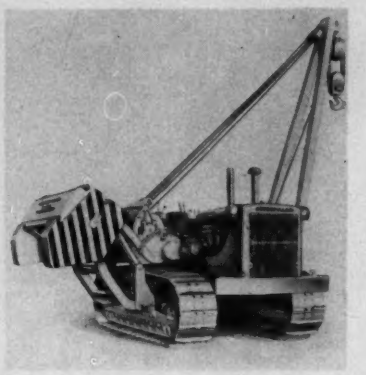
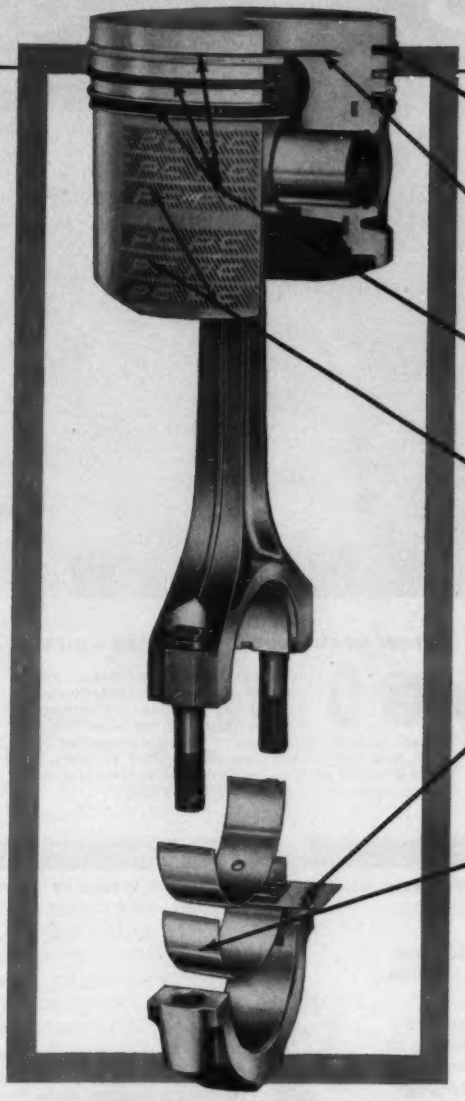
entire gate assembly is removable. Clam gates have overlapping lips and adjustable rubber seals. Shafts are stainless steel and they turn in nylon bearings. The design incorporates a 50-deg cone slope to assure fast discharge of medium-slump concrete. A 36-in. rubber discharge spout is available for all five sizes. Net weights of the five buckets are: ½ yd—355 lb; ¾-yd—455 lb; 1 yd—700 lb; 1½ yd—840 lb; and 2 yd—1,075 lb.—**C. S. Johnson Co., P.O. Box 71, Champaign, Ill.**



Pipelayer Lifts 68 Tons

Increased lifting capacity and more horsepower are two major improvements incorporated in Caterpillar's new Series H 583 pipelayer. The new rig, which weighs 83,840 lb, has a lifting capacity at a 4-ft overhang of 137,000 lb. Horsepower at the flywheel has been increased from 191 to 225. A new turbocharged engine equipped with a dry-type air cleaner powers the new pipelayer. Top speed is now 6.4 mph, an increase of 1 mph over the old models. A torque converter with 4:1 torque multiplication is standard. The power take-off at the rear of the engine serves three purposes—it drives the pump for transmission lubrication, brake booster, and steering clutch controls; it drives the vane-type hydraulic pump that controls the counterweight; and it drives the shaft for the pipelayer winches. Another new feature is a pressure lubrication system that services the entire power train with filtered oil. Engine-type oil lubricates and cools the transmission, bevel gears, and steering clutches. The compartments housing these components are interconnected to form a common oil sump. The track group is

7 ways to save worn engines with PERFECT CIRCLE POWER SERVICE!



1. **Save by using Perfect Circle Manulathe.** Accurately and quickly regroove worn top ring grooves. Practically all worn aluminum pistons require this operation when new rings are installed.

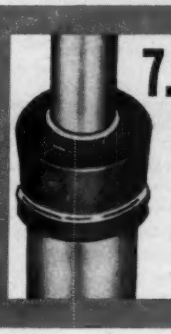
2. **Save by using Perfect Circle tempered steel spacers** for re-machined ring grooves. Precision-made to compensate for increased groove width. Retards ring and groove side wear.

3. **Save by installing Perfect Circle 2-in-1 Chrome piston rings.** Both top rings and oil rings are plated with thick, solid chrome that resists wear, more than doubles life of cylinders, pistons and rings.

4. **Save by using Perfect Circle Nurlizer.** Proved by more than 14 million successful installations. Restores pistons to correct fit, accurately, quickly and permanently, for only a fraction of the cost of new pistons. Nurlizing interrupted surface assures adequate piston lubrication, reduces cylinder and piston wear, eliminates piston slap.

5. **Save by using Perfect Circle Plastigage.** Bearing clearances can be quickly and accurately checked in as little as one-third the time required by older methods. Available in three types covering these clearance ranges: .001-.003, .002-.006, .004-.009.

6. **Save by using Perfect Circle Taper Shim Bearing Adjuster.** Custom-made to correct excessive clearance in main and connecting rod bearings, pre-cut and scientifically tapered. Precision fit assured. Custom-made for all popular engines in .002, .003, and .004 thicknesses.



7. **NEW! Save by installing Perfect Circle Valve Seals.** Newest PC Power Service product stops oil loss through valve guides on overhead valve engines. For best performance, greatest economy, install Perfect Circle Valve Seals when valves are reconditioned and when new rings are installed.

With so many ways to economically extend the life of worn engines—no wonder leading fleet owners use Perfect Circles for top performance and efficiency.

Special fleet technical assistance is available through your Perfect Circle supplier.

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More Capacity
Higher Head
Longer Life

THE NEW HOMELITE 300

NEW SEAL LASTS FIVE TIMES LONGER

New pump shaft seal design mates carbon seat against ceramic-coated bronze ring for extra long service life on toughest pumping jobs. This new seal, standard equipment on the new Homelite "300" pumps, lasts five times longer than ordinary cast iron-bronze seals to slash pump downtime and maintenance costs to a new, negligible low.

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Add up all the features of the new Homelite "300" pumps and you'll find your best and surest pump answer to saving money on the job.

More Capacity. These new 3" pumps handle 18,000 gallons per hour. That's 300 gallons per minute. You can do your pumping in minutes . . . eliminate labor-costing delays. You can pump muddy or sandy water easily without clogging.

Light Weight. With dimensions of 25"x 19" x 23", the Homelite "300" pumps weigh only 103 pounds. They're easy to truck, easily picked up and carried by one man, fast to get on the job in any location.

Higher Head. Homelite "300" pumps are guaranteed to self prime at 28 feet above water level. Total head, including friction, is 65 feet. Standard-speed model gives you a total head of 125 feet. High-pressure model gives you total head of 185 feet.

Variable Speed. Hand throttle control allows you to pace these pumps to the job. You can throttle them down for quiet, economical handling of seepage.

Longer Life. Homelite pumps are famous for fast starting and trouble-free operation in any kind of weather. The design and workmanship that goes into a Homelite air-cooled gasoline engine driven pump is your guarantee of long life for the pump. Now with the new seal, standard equipment with the "300" pumps, you're even surer of long life and low maintenance cost.

It will pay you to ask for a free on-your-job demonstration of the new Homelite "300" pumps right away. Three models available: slow-speed; standard-speed and high pressure.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

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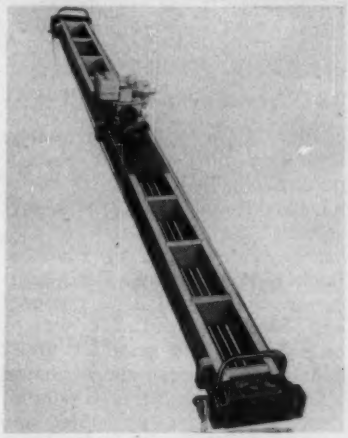
brand new. Track pins are now 2 in. in dia, track bushings are now 3 in. in outside dia, and links are induction hardened and strutless. Standard track shoes are 28 in. wide and 30 in. shoes are available. The counterweight design has a bottom pivot point that rotates the counterweight upward and out from a second pivot point on the frame. This design gives more ground clearance beneath the counterweights when they are extended. Other features of the new Pipelayer include in-seat starting, console-mounted pipelayer controls, lifetime-lubricated seals for tracks and idlers, and a beefed up undercarriage.—**Caterpillar Tractor Co., Peoria, Ill.**



Thor Adds New Screeds

With the introduction of two new units, the Thor line of Stra-Paction vibratory concrete finishing screeds covers a range of from 4 to 30 ft in 1-ft multiples. The new screeds are 16 and 30-ft long units. Thor's screed design utilizes two wooden beams with cross supports and a series of vibrating steel straps that are attached parallel to the beams. The high-frequency slapping action of the straps forces water and air out of the concrete and produces a dense, compact surface. Two men can draw the light-weight screed across the freshly laid concrete. Power for the screed is furnished by a gasoline engine mounted on top of the screed frame. Other design features include two tension cables on each beam to assure that the screed will remain in plane without sagging or crowning; new aluminum end housings that give ready access to straps and cables; a new

RENNER *New* TWO PIECE DIPPER TOOTH

SELF LOCKING PIN—Tapered all metal spring type pin tightly locks cap onto shank. Easily accessible for quick removal when point replacement is necessary.

SHANKS FOR ALL BUCKETS—Shanks fit all Renner dippers and are available for other makes. Rugged design assures long life without penalizing effective penetration.

LONGER LASTING CAP—Replaceable tooth point is made of tough high alloy, high carbon steel. Effective curve on bottom surface keeps point sharp while wearing . . . maintains original penetrating ability for longer period.

Renner's new shank-and-cap tooth design has been job tested under varying excavating assignments and has proved outstanding in wearing qualities as well as in digging ability. To increase your shovel output and eliminate hours of costly downtime, order Renner Two Piece Dipper Teeth from your power shovel dealer or write us for detailed information.

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Please send catalog on Economy Steel Forms, and address of nearest sales office (there are 24 coast-to-coast).

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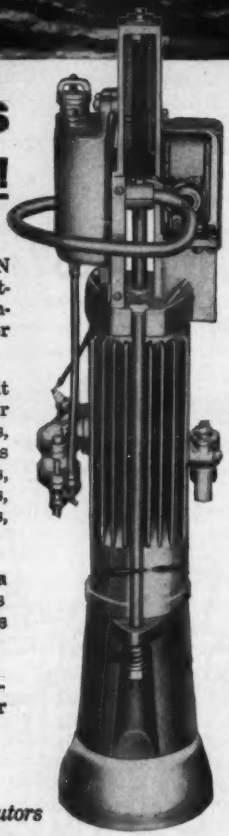

YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches — on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydroelectric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION - On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION— We will be glad to arrange a demonstration for you; see our nearest distributor or write.

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BARCO RAMMER *for High Degree Soil Compaction*
BARCO-VIBRA TAMP *for Granular Fill and Bituminous Surfacing*

strike-off angle plate on the leading edge and a T-plate on the trailing edge to provide a larger finishing surface; and 2 x 6 ft beams that increase strength.— **Thor Power Tool Co., 175 N. State St., Aurora, Ill.**

B&D Shows ½-in. Drill

A new ½-in. utility drill that cuts diameters up to ½ in. in steel, ¾ in. in masonry, 1 in. in hardwood, and up to 2 in. in any material that a hacksaw can cut, has been developed by Black & Decker. Powered by a B&D-built motor, the new drill is compact and well-balanced. It weighs only 7½ lb and sells for under $50. Features include a geared chuck and key, three-conductor cable and rubber key holder, and an instant release trigger switch. **—Black & Decker Mfg. Co., Towson 4, Md.**

Crane Handles 40 Tons

When mounted on an 11-ft wide, 8x4 carrier, Units new 360T truck crane lifts 40 tons with a 40-ft boom. The rig also can lift 120-

How 2 cu. yd. Trojan handles all loading operations for Midland, Texas Plant.

Replacing another tractor shovel, this Trojan 154 gives a production boost to the ready-mix plant of West Texas Concrete Products, Inc. The precision control, fast travel speed and high capacity allow it to keep the batcher loaded and still handle truck loading, stockpile maintenance and other chores around the plant.

Trojan 154 digs in, moves material and charges batcher on a fast, continuous cycle.

Your TROJAN distributor can help you with the many advantages of YALE Financing plans, the most complete ever offered to equipment buyers . . . TIME PAYMENTS, LEASING PLANS (with or without OPTION TO PURCHASE) . . . exactly what you need to finance your new TROJAN machines.

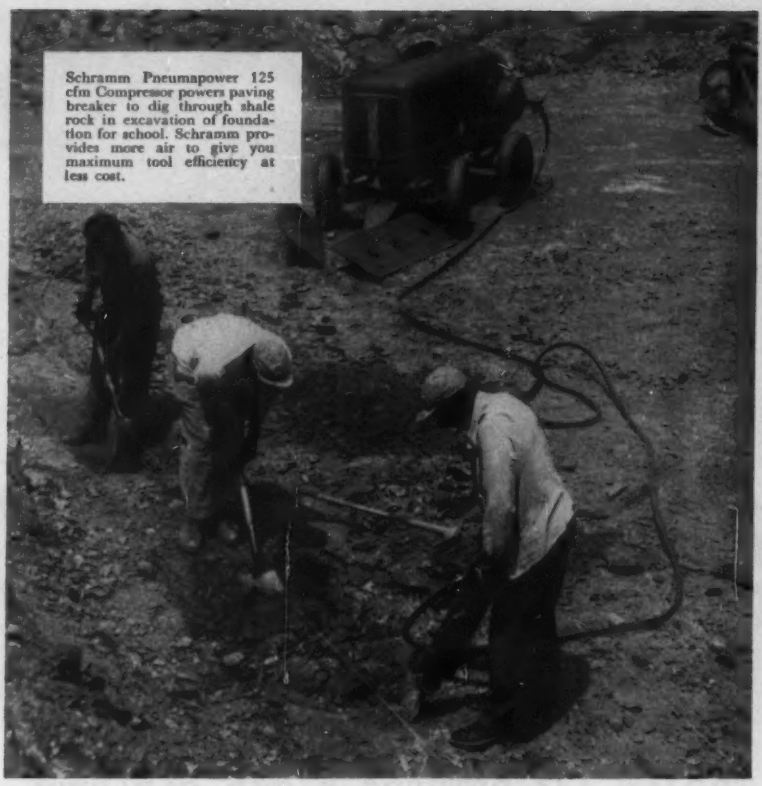
TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

TROJAN 154 BETTERS RATED CAPACITY—PROVES "INDISPENSABLE" IN READY-MIX PLANT OPERATION

High capacity and precision control were the features that sold West Texas Concrete Products, Inc. on the Trojan 154. They needed a fast operating machine with the ability to dump exact amounts of material into the batcher. This was no problem for the Trojan 154. . . . But they required a machine with a 2½ cu. yd. capacity. A trial of the 2 cu. yd. model 154 proved that the Trojan could better its rated capacity by ½ yd. load after load, day after day, and still maintain work cycles fast enough to allow it to handle other jobs around the plant area. "The Trojan 154 is a fast loading, fast travelling machine." says Mr. John Marlow, Plant Superintendent of the Midland, Texas Plant. "Its part in boosting the speed of our operation has meant considerable savings for us."

A loading operation for the Trojan tractor shovel involves carrying 6,000 lbs. of rock, 8,000 lbs. of regular sand and one load of fine sand — dumping the correct amounts into the batcher and returning the surplus to the stockpile. The batcher, in turn, dumps the mixture into the ready-mix truck. The fast loading cycles of the Trojan 154 help to complete this entire operation in six minutes.

TROJAN DIVISION, THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA



Schramm Pneumapower 125 cfm Compressor powers paving breaker to dig through shale rock in excavation of foundation for school. Schramm provides more air to give you maximum tool efficiency at less cost.

CONTRACTORS WITH COMPETITIVE COMPRESSORS REPORT:

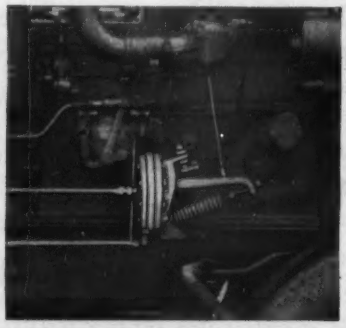
The man with the Schramm does 15% more work

Take a close look at your present compressors. Compare them with this Schramm 125 Portable. Chances are you're not getting your money's worth. Time after time, contractors report that *competitive* 125 cfm compressors take from 10 to 15% more horsepower to provide 125 cfm of air at 100 psi. *They also take 15% more fuel* . . . and cost more to buy!

Here's the smallest, most compact compressor in its rating. It's light weight, easy to move. Twelve-volt electric battery makes it easy to start, even in cold weather. Any engine mechanic can easily service . . . parts are 90% interchangeable between engine and compressor.

The statements above are *FACTS*. Let us tell you about them in more detail and show you our complete line of Portable Compressors—one or more of which will suit your needs exactly. Send today for your free copy of SPB-58.

Schramm 75 cfm Compressor is ideal for air tools used by contractors. Use it to power backfill tampers, chain saws, paving breakers, riveting guns, rock drills, trench and clay diggers, sheeting drivers.



Automatic control is a feature of Schramm Portable Compressors. The patented Schramm Pneumastat controls speed of each unit without operator's manipulation. Engine operates from idle to rated speed according to air demands.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

604 North Garfield Ave. • West Chester, Pa.

Please send me a free copy of Schramm Portable Air Compressors, SPB-58.

Name_____

Title_____

Address_____

City_____ Zone_____

State_____

SCHRAMM, INC.
604 North Garfield Ave., West Chester, Pa.

ft of boom without assistance from the horizontal ground level position to the operating position. The crane is rated at 30 tons mounted on a 9-ft wide carrier powered by an International gasoline engine and at 35 tons mounted on a 10 ft-2 in.-wide carrier powered by a Waukesha six-cylinder gasoline engine. Features include a big 90-in. dia roller path to absorb maximum loads at long radius; hook shoes to absorb the upward thrust; a pin-type turntable lock; self-aligning center post trunnion to relieve the turntable from transverse stresses; and independent boom hoist. Standard power for the upper machinery is either a Chrysler V-8 engine or a G.M. diesel engine. Both are equipped with torque converters. A special boom adapter helps strip the machine for road travel. This is pin-connected to the end of the inner boom section so that the crane's own hook block lifts off the counterweight, other components.—**Unit Crane & Shovel Corp., 6411 W. Burnham St., Milwaukee 19, Wisc.**

Payloaders Get New Job

A vibratory compactor is now available as an attachment for all four-wheel-drive Hough Payloader tractor-shovels. The self-contained, self-powered Jackson compactor can be interchanged with the bucket in minutes. It is powered by an air-cooled motor and generator that drive vibratory units on each of the four compactor pads. Each pad delivers up to 4,200 three-ton blows per min. The compaction pads cover a 10-ft wide area. They extend beyond the tread of the tractor-shovels so that they can work in close quarters and near side walls. Any of the four shoes can be detached from the mounting and used as a manually guided, self-propelled compactor. —**Frank G. Hough Co., Libertyville, Ill.**

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96″ I. D. reinforced concrete tile 88′ under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.

Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ⅓ of the 48″ ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.

JACKING PROCEDURE—A service pit 28′ deep by 22′ wide by 40′ long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48″ ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.

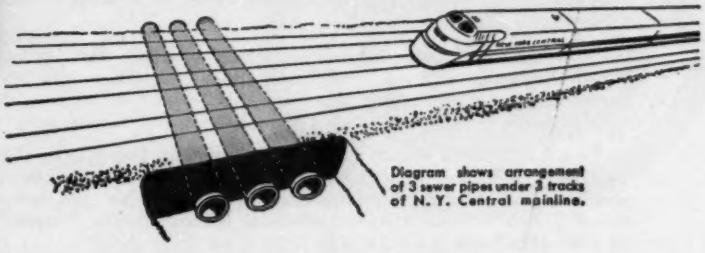
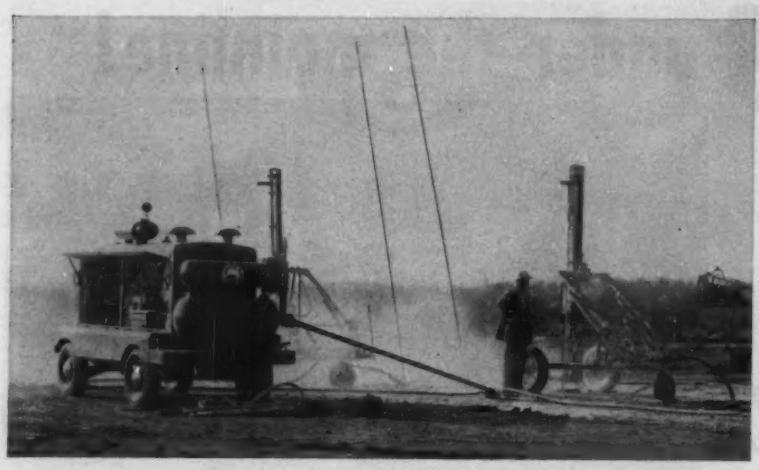


Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

Walker St. • Minneapolis 16, Minnesota

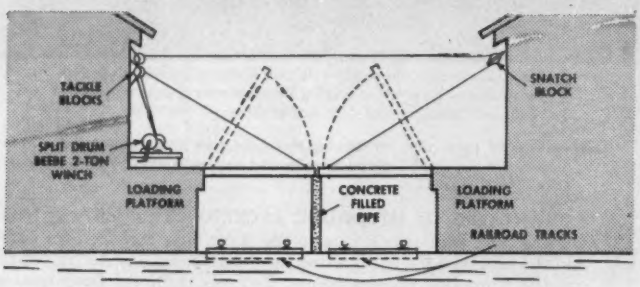


Only Jaeger delivers 600 cfm at 1700 rpm

Although powered with the same GM 6-71 diesel engine as the Jaeger "600", other compressors run 100 rpm faster to produce the same 600 cfm of air. In 8 hours' continuous operation a Jaeger averages 48,000 fewer revolutions, saves miles of engine piston travel and many pounds of fuel. Jaeger "125", "250" and "365" sizes are comparably efficient. See your Jaeger distributor for complete cost-saving data, or request Catalog JC-7.

THE JAEGER MACHINE CO., 800 Dublin Ave., Columbus 16, Ohio

BEEBE WINCH WITH SPLIT DRUM OPERATES DOUBLE DRAWBRIDGE



The problem: to provide a means for moving freight merchandise back and forth between two warehouses facing each other across double railroad tracks.

The solution: a double drawbridge which spanned the tracks. When the bridge is down people and freight move across it between warehouse platforms. The bridge is opened to let freight cars through. A simple idea but a real time and money saver

One 2-ton Beebe Winch with a split drum was found to be the most convenient and economical power source. A man can lift both sections of the bridge simultaneously with only one split-drum winch. Beebe Winches are ideal wherever low-cost power is needed on a standby basis.

BEEBE BROS.

2730 SIXTH AVENUE SOUTH • SEATTLE, WASHINGTON

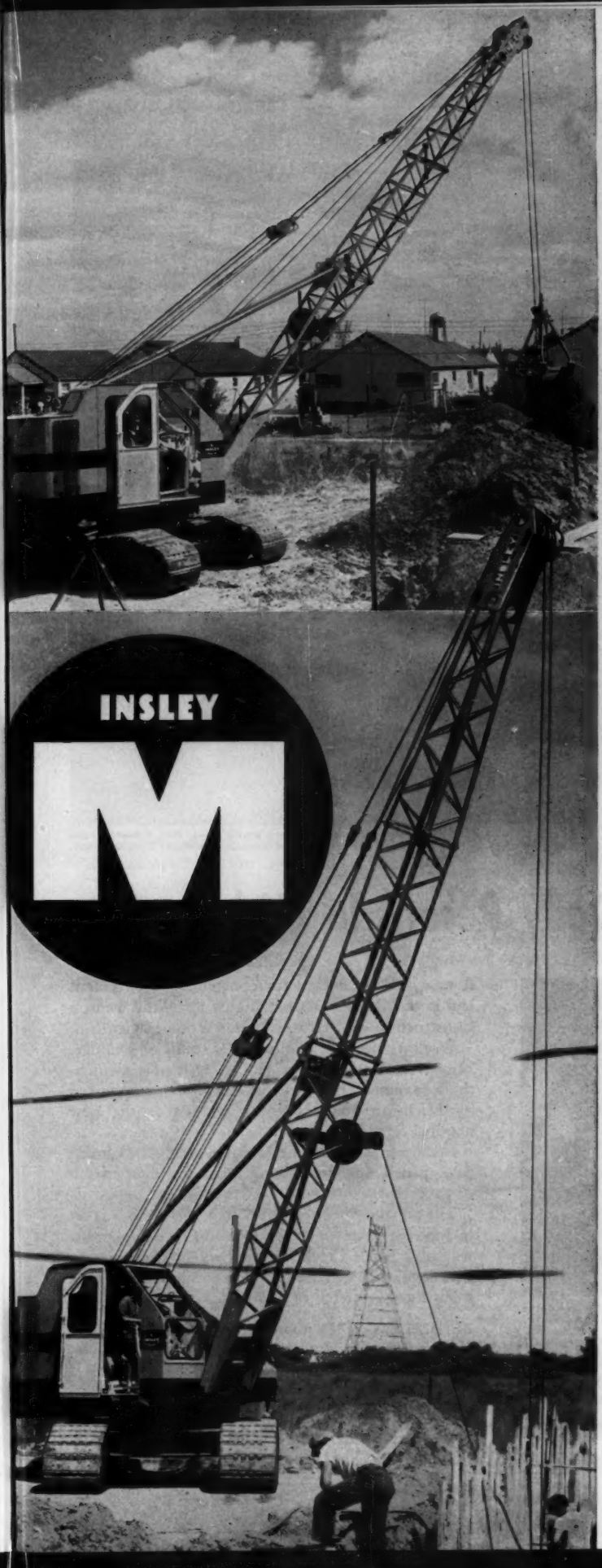
New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

PANEL SCAFFOLDING — A loose-leaf instructional handbook by Universal Mfg. Corp. illustrates and describes how steel panel scaffolding can replace post-type shoring for many applications, especially in reinforced concrete construction. Universal scaffolding features a patented gravity lock that allows shoring to be assembled without tools. The company offers a free engineering layout service and supplies all scaffolding with a rust-eliminating galvanized coating.— **Universal Manufacturing Corporation, Zelienople, Pa.**

SAFETY MANUAL—The Associated General Contractors of America have reprinted 14 pocket-size sections of their popular "Manual of Accident Prevention in Construction." The titles of the sections are as follows: A—Scaffolding and Ladders; B—Explosives and Powder Actuated Tools; C—Housekeeping and Sanitation and First Aid; D—Welding and Cutting; E—Flammable Gases and Liquids; F—Excavation and Shoring; G—Pile Driving and Marine Equipment; H—Concrete, Masonry, and Steel Erection; J—Hoists, Cranes, and Derricks; K—Highway Construction; L—Heavy Equipment, Repair Shops; M—Tunnels and Compressed Air Works; O—Inspection Check List; R—Introduction. Copies are 15¢ each. Complete manual costs $3.75. Quantity prices also available. — **The Associated General Contractors of America, Inc., 20th and E Streets, N. W., Washington 6, D. C.**

CATERPILLAR BOOKLETS — Three new booklets have been issued by Caterpillar. Form D848, entitled "Exchange Down Time for Go Time," explains the dealer exchange program whereby a contractor can get a machine back on the job faster through replacement of assemblies with dealer-rebuilt units. Form D858, entitled "Tips for Land Forming



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produced it!

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15 ton crawler crane

3/4 cu. yd. excavator

20 ton truck crane

DESIGNED WITH YOUR JOB IN MIND . . .

- All new cab with increased visibility and operator comfort.
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- Large diameter turntable with internal bull gear.
- Anti-friction bearings, aluminum bronze bushings and involute shaft splining.
- Wide, deep design crawler carbody.
- 12-ft., 6-in. crawlers standard.

COMPLETE RANGE OF OPTIONALS

Back hitch type high gantry • Independent travel • Independent boom hoist • Third drum.

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INSLEY MANUFACTURING CORPORATION
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WEST COAST DIVISION—LOS ANGELES 54, CALIF.
THE MAXI CORPORATION (Subsidiary) LOS ANGELES 54, CALIF.

Denton Company's paving crews, using Bethlehem road steels, established a new record of 6,029 ft in a single day.

Pavers Set New Daily Record in Michigan

Michigan State Highway Department officials meet at the job site shortly after the record was established. Left to right: Gordon Thomas, Ontario Highway Dept.; Leet Denton, *Contractor;* C. B. Laird, *Chief Construction Engineer,* Michigan State Highway Dept.; J. C. Mackie, *Michigan State Highway Commissioner;* Charles Leduman, *General Superintendent,* Denton Construction Co.; Frank Skebensky, *Metro. District Road Engineer,* Michigan State Highway Dept.; Carlos Weber, *Chief Engineer,* Michigan State Highway Dept.; Mickey Palmer, *Project Superintendent,* Denton Construction Co.; and Pete Branstrom, *Project Engineer,* Michigan State Highway Dept.

A new national record for concrete road pavement laid in one day was set on August 12 by the Denton Construction Co., Grosse Pointe Woods, Michigan.

Working on U.S. Highway 23, south of Dundee, Mich., the Denton crews laid 6,029 ft of nine-inch-thick pavement 24 ft wide in 12½ hours, announced by Michigan State Highway officials as the new national record.

Bethlehem supplied mesh, dowel units, hook bolts, base plates and reinforcing bars for this stretch of pavement.

The previous record of 5,787 ft in 12½ hours was set in July, on a stretch of the Detroit-Chicago expressway near Battle Creek, by the Sargent Construction Co., Saginaw, Mich. Bethlehem also supplied the road steels for this stretch of highway.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

NEW PUBLICATIONS . . .
continued

Contractors," gives suggestions for engineering a land forming project with diagrams showing how a job could be laid out. Form DE836, entitled "On 3 Pipeline Jobs with Cat Equipment," gives job stories from several pipeline jobs. — **Caterpillar Tractor Co., Peoria, Ill.**

PLACING EQUIPMENT—Pocket catalog WCG-1P from the H. S. Watson Co. lists 21 different items of concrete and asphalt placement equipment including buggies, screeds, pavers, buckets and floats.—**H. S. Watson Co., 1316 - 67th St., Emeryville 8, Calif.**

COMPRESSOR SHEET—A specification sheet describing what the manufacturer calls the world's largest portable rotary air compressor is available. Spec sheet P-114 describes the Le Roi 1200RD2, a 1,200 cfm machine.—**Sales Promotion Department, Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.**

COMPANY HISTORY — "Forty Years of Progress Along Production Road" is the title of the feature story in the latest issue of Twin Disc Clutch Company's magazine, "Production Road." Commemorating the company's 40th anniversary, the article gives a history of engine-powered machinery since the company was founded in 1918, with special emphasis on Twin Disc products. Also featured are details of three new products; the MG-512 marine gear, the 1100-series single-stage torque converter, and the model DOC oil-actuated multiple-plate clutch.—**The Editor, Production Road, Twin Disc Clutch Co., Racine, Wis.**

BOLT CHART — A 17x22-in. chart, form ADV 982, shows the proper procedure for installing high strength structural steel bolts. Identification of such bolts is explained and installation procedure is covered in four principal steps. — **Advertising Division, Republic Steel Corp., 1441 Republic Building, Cleveland 1, Ohio.**

EXTENSION RODS—A 4-p folder, No. E-434, contains step by step instructions for rethreading Sandvik Coromant Extension rods. Diagrams provide full ma-

"CARCO WINCH'S DEPENDABLE PULLING POWER IS IMPORTANT IN LAYING PIPE"

Reports John Wall of Berry Construction Co.

Carco winches were important and necessary equipment to subcontractor Berry Construction Co., of New Hebron, Miss., in laying 130 miles of the Carolina Pipeline Company's new line across northeastern South Carolina.

Three Carco model F winches mounted on Allis-Chalmers HD9 tractors were continually called upon to tow heavy equipment through swampy and muddy terrain. The value of the pulling power of Carco winches to the contractor is evident from the fact that about half the line was laid in swampy areas and half in mud.

Mr. John Wall, General Superintendent, reports, "It would have been difficult, if not impossible, to lay pipe profitably in the terrain we encountered without Carco winches. We are most favorably impressed with Carco winch dependability and pulling power as well as their minimum need for maintenance."

Carco makes more winches for more makes and models of industrial tractors than any other producer. That's conclusive proof that Carco winches are engineered to perform efficiently and are built to withstand the rugged service that contractors give them. See your Carco dealer for the line pulls, cable capacities and other pertinent facts on the eight Carco winch models. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington. Branch at Chicago, Illinois.

SPECIFICATIONS CARCO F WINCH

Cable Drum Sizes (standard):
- Barrel diameter ....11"
- Flange diameter ....19"
- Barrel length .....15"

Drum Capacity (calculated):
- 5/8" wire rope.....603'
- 3/4" wire rope.....418'
- 7/8" wire rope.....308'
- 1" wire rope.....236'

Line Pull, Bare Drum: To 40,000 lbs. depending on tractor horsepower.

Shipping Weight .....1,685 lbs.

FEATURES • CARCO F WINCH
- Doubles tractor pulling power
- Extends tractor reach
- Power reverse to pay out line
- Toggle type brake
- Automatic brake at extra cost
- Optional over or underwind
- Constant mesh gear train
- Concealed push-pull cable controls
- Streamlined Carcometal case
- Heavy duty ball and tapered bearings
- Lubricated by continuous oil bath
- Three roller fairlead extra

Many of the nation's leading contractors depend upon Carco for tractor winches. You, too, can expect greater value from the leading producer, and get it from Carco, first in tractor winch production.

CARCO

WATER WORRIES?

Have them controlled efficiently, economically, by dewatering specialists from the John W.

STANG *Corporation*

Los Angeles • Omaha • Mobile • Tacoma

NEW PUBLICATIONS . . .
continued

machining dimensions for both Sandvik's ⅞ and 1-in. hexagon cold rolled rods and for the 1¼, 1½, and 2-in. round rods.—**Atlas Copco Eastern, Inc., 610 Industrial Ave., Paramus, N. J., and Atlas Copco district offices.**

TEMPORARY FACILITIES — Construction plans for a dozen of the temporary facilities most often needed by contractors are contained in a booklet "Temporary Construction Facilities with Fir Plywood." Items covered included signs, tool boxes, material shelters, toilets, office buildings, and barricades. — **Form 58-460, Douglas Fir Plywood Association, 1119 "A" St., Tacoma, Wash.**

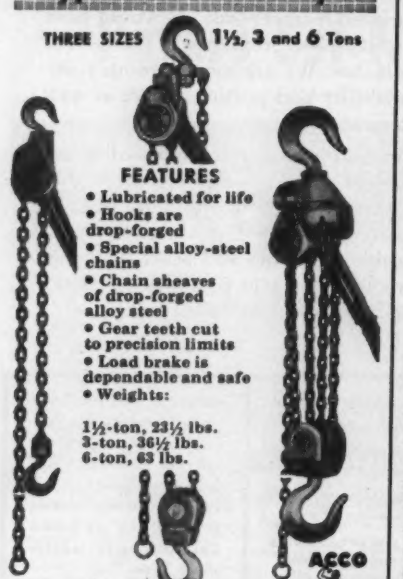
SNAP-ON-BACKHOE — A new folder by Warner & Swasey describes and illustrates their snap-on-and-off Hopto backhoe. The backhoe can be attached in half a minute to either crawler or rubber tire tractor. Photographic views of the machine at work on a variety of jobs are included.—**Badger Division, The Warner & Swasey Co., Winona, Minn.**

PIONEER BOOKLETS—Pioneer Engineering has issued four new product bulletins. Form 676 gives specifications, dimensions, weights, and operating characteristics of the model 8C in-line portable crushing and screening plant. Form 674 is a 16-p brochure describing the 1959 model of the Vibromatic bituminous paver, including new improvements like air-operated clutches, improved conveyor design and crawler pads. Form 677 describes the semi-portable model 306W washing plant for washing and sizing rock, gravel, and sand. Form 672 describes the model 425 stabilizer plant for the production of stabilized road materials.—**Pioneer Engineering Division, Poor & Company, 3200 Como Ave., Minneapolis 14, Minn.**

ALLIS - CHALMERS EQUIPMENT—"Special Equipment for Allis-Chalmers Crawler Tractors and Motor Graders" is a 12-p catalog, Form MS-1189, describing a number of attachments and accessories designed to increase the capabilities of A-C machines. —**Construction Machinery Division, Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.**

NEW WRIGHT Type "C" Pull-A-Ways

THREE SIZES 1½, 3 and 6 Tons



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Wright Hoist Division
AMERICAN CHAIN & CABLE
York, Pa., Bridgeport, Conn.

How to avoid costly legal difficulties in the construction field . . .

Just Published

LEGAL ASPECTS OF CONSTRUCTION

By Walter C. Sadler
Engineering and Legal Consultant
387 pages, 6 x 9, 76 illus., $8.50

Here is a clear, practical, and thorough guide to help you avoid legal entanglements and costly litigation in the many relationships and areas of possible conflict of interest in the construction field. It traces the pattern of the contracting business and its possibilities for misunderstanding or disagreements—makes clear the rights and liabilities of contractor, designer, owner, and financier. Includes many typical cases and features a special section on boundary rights. An invaluable guide to "preventive law" for everyone in the construction industry.

COMPOSITE CONSTRUCTION IN STEEL AND CONCRETE

Fully covers design of steel beams and concrete slabs. By I. M. Viest, AASHO Road Test; R. S. Fountain, Portland Cement Assoc.; and R. C. Singleton, Nelson Stud Welding. 147 pp., 90 illus., $7.50.

HANDBOOK OF RIGGING

A complete manual of rigging practices and pointers for construction and industrial work—shows how to handle every step in any rigging operation. By W. E. Rossnagel, Safety Engr. 2nd Ed., 342 pp., over 300 illus., $7.75.

BUILDING CONSTRUCTION HANDBOOK

Covers every major phase of building design and construction—stress analysis, structural design, building materials, construction management, etc. F. S. Merritt, Editor-in-Chief. 851 pp., 428 illus., 183 tables, $15.00.

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"Nothing keeps a unit out of the shop like TORQMATIC DRIVE"

Get to talking maintenance and repairs with the boss of a construction job being handled by equipment with TORQMATIC DRIVES and you'll get some real eye-opening information.

He'll show you equipment availability records that are really something to shoot at—the kind of records you'd like to have yourself.

And he'll show you equipment maintenance costs that are rock-bottom – engine, transmission, and drive-line life that adds up to a pile of profit.

Dig a little deeper and you'll get the reason – TORQMATIC DRIVE transmits power through oil. So the oil takes the wear and tear—absorbs those jarring shocks and jolts that can beat up equipment components in stick-shift equipped units.

Result? More and more profits for more and more contractors. You could be one of those contractors if you specify TORQMATIC DRIVES when you buy. They're available in equipment that can handle both large and small jobs. Want to know more? See your equipment dealer or write:

Allison Division of General Motors, Indianapolis 6, Indiana
In Canada, General Motors Diesel Ltd., London, Ontario

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TORQMATIC® DRIVES

THE MODERN DRIVE FOR MODERN EQUIPMENT

NICK GOT STALLED

an ordinary tire "blew" the job

but DICK GOT IT HAULED with

U. S. ROYAL SAFETY 1st OFF-ROAD TIRES

contractor-proved against job delays!

At hundreds of big projects, contractors have *proved* that using U. S. Royals prevents costly tire delays, keeps jobs on schedule!

Why? Because today's U. S. Royal Tires have exclusive, advanced features that deliver extra traction, greater strength, longer wear. And because they're backed up by expert on-the-spot *service* and complete, convenient *retread facilities*.

Ask your U. S. Royal Dealer to demonstrate how these contractor-proved tires can help cut delays for *you*. And be smart—specify "U. S. Royal" on your next new equipment!

TRIPLE IMPACT PROTECTION ... FULL-LUG TRACTION!

Expressly designed for off-road work demanding the utmost in tire staming, traction and flotation.

New Wide Base
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in Royal-Processed NYLON Construction

US RUBBER

United States Rubber

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Co., Ltd.

TASK FORCE—To keep 100 machines on York, Pa., road project in top condition, Lycoming Construction Co. brought in a fleet of mobile service rigs and 17 maintenance specialists. This experienced crew made daily inspections of every earthmoving rig on job.

Big Service Crew Pays Its Way

"OUR MAINTENANCE program has paid for itself 10 times over. We now consider our equipment service crew as important a part of our team as the paving crew, our shovel operators, or anybody else on the job."

This is the considered opinion of Herbert Allison, equipment superintendent for Lycoming Construction Co. of Williamsport, Pa. The very fact that Allison now has the title of equipment superintendent reflects the company's new look in maintenance. It wasn't too long ago that Lycoming, paid only lip service to the idea of properly maintaining its equipment fleet.

"Now our policy is to operate with as much new equipment as possible and to give that equipment the best possible on-the-job maintenance," says Allison.

Plenty of Equipment

Lycoming believes in loading up a job with plenty of equipment and then finishing off the project in a hurry. For an $8.9-million road job at York, Pa., the contractor moved in five brand new Lorain shovels and 14 new Euclid rear dumps. These supplemented the 17 bottom dumps and five scrapers that were already available for the job.

Altogether, Lycoming mobilized for the job a fleet of more than 100 pieces of equipment, including motor graders, crawler tractors, compressors, truck cranes, and draglines. This array of equipment moved about 2,000,000 yd of dirt in 6 mo. At times the five Lorain 2½-yd shovels were digging an average of 10,000 yd a day, and the Euclid trucks were traveling as far as 13,000 ft on the haul.

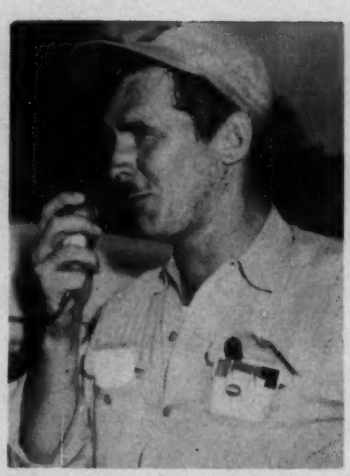
Keeping all this machinery on the go was a well-trained, full-time crew of 17 maintenance specialists. They made a daily check of each major piece of equipment and filled out a report form on its condition and the

amount of service it required. Radiators, tires, batteries, and engine and chassis lubrication were checked and recorded daily. Transmissions, rear-ends, drive trains, and hydraulic systems got a weekly going over.

"The daily report on each piece of equipment provided the key to the success of our overall maintenance program," says Allison. "This is the only way we can spot trouble before it becomes serious. When I see from our report slip that a certain rig is burning oil, for instance, I check over the last few reports to see whether this is a regular thing. If it is, I know something is wrong, and we pull the machine into our shop and check it out.

A Stitch In Time

"That's where the big saving in downtime comes in," says Allison. "For one thing, we usually save a lot of work in the shop because we catch trouble before it gets out of hand. And when we can schedule a rig for the shop before a major breakdown we don't disrupt our production fleet. All around, it makes for a much smoother, more efficient operation."



CLOSE CONTACT—Two-way radio keeps superintendent Allison in touch with crew.

In the three years since Allison has held the title of equipment superindent, Lycoming has doubled its maintenance crew. They now have available a fleet of trucks equipped with General Electric two-way radios to deliver lubricants, fuels, and parts to any part of the job at anytime. Several trucks are equipped with floodlights so that they can service equipment at night.

Farm Out Engine Work

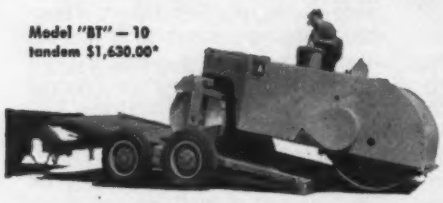
Lycoming handles all of its own maintenance except for major engine overhauls. "Those jobs we send to our distributors' service shops," says Allison. "In my estimation, they are the only ones with the equipment to do a proper job. Engine overall is a precision, time-consuming job. But we take care of just about every other type of maintenance; and that includes anything from changing a tire to rebuilding a track to pulling a transmission.

"But the real payoff of our maintenance program is in solving the so-called little problems. On the York job we originally thought we could clean our air filters once a week. But the job was extremely dusty; so we changed our minds and cleaned them every 20 hr just to be on the safe side. That's how I earn my pay. I make sure that small problems don't get to be big problems."

GET MORE WORK
from each rig per day

MILLER Tilt-Tops' 2 minute loading cuts hauling time between jobs...

Miller Tilt-Tops help you cut non-productive, between-job time for both machine *and operator* on all sorts of jobs, all sorts of rigs . . . such as picking up a paver after it lays each asphalt strip and returning it to the starting point. The trailer's big 8 ft. x 14 ft. platform — up to 20 ft. long if you want it — tilts, forms its own ramp in just seconds for fast, *drive-on* loading or unloading. This kind of handling speed (almost impossible with slower loading, more cumbersome trailers) permits quick shuttling for nearly every rig . . . often saves duplicating expensive equipment. See these production boosters in models from 4 to 15 tons capacity, at your MILLER distributor today!



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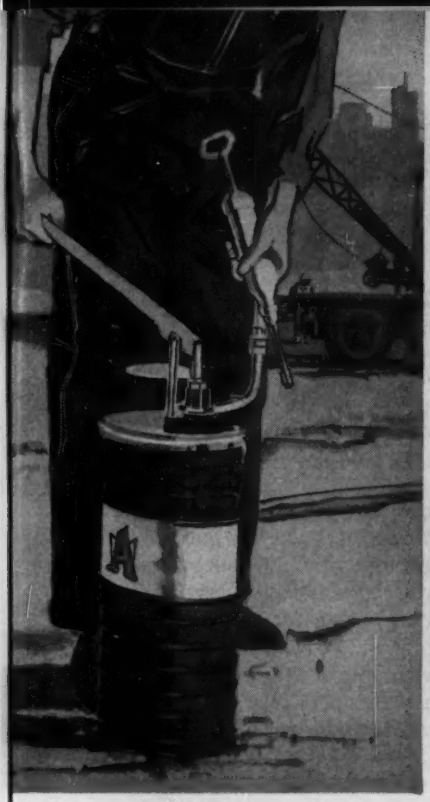
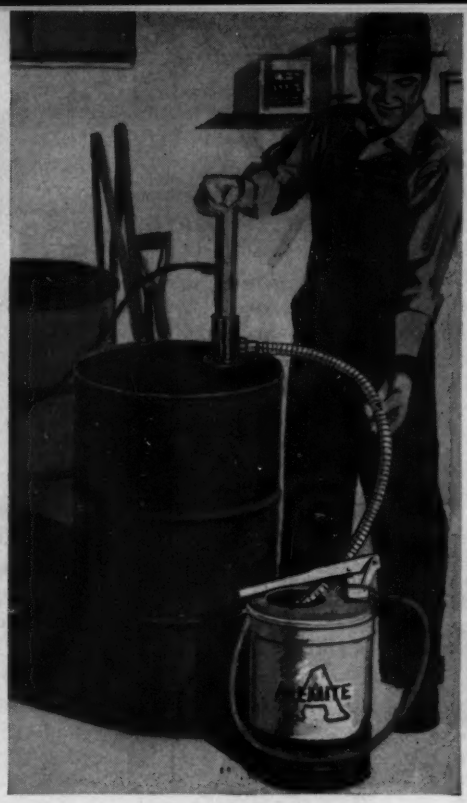
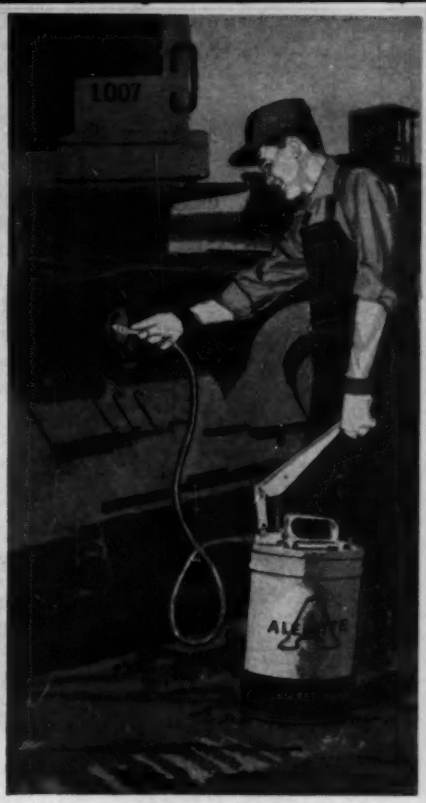
457Q South 92nd Street, Milwaukee 14, Wisconsin

*F.O.B. Milwaukee, Wisconsin
Complete with platform and tires.
Brakes and optional equipment extra.
Plus 10% Federal Tax







Alemite Loader Pump is 3¾ Man-Hours Faster than hand loading, for every 100 lbs. of grease used! Insures delivery of *clean* grease, free of dust and grit that can cause costly breakdown. Just a few strokes fill gun. Models to fit and seal any original container—from a 400-lb. drum to a 25-lb. pail. No mess—no waste!

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HOW ALEMITE PUTS MORE JOB-TIME INTO YOUR DAY

. . . and cuts maintenance costs, too!

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Company.....

Address.....

City.....State.....

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STEWART-WARNER CORPORATION

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SEND NEW ADS OR INQUIRIES to Class. Adv. Div. of Construction Methods & Equipment, P.O. Box 12, N. Y. 36, March Issue closes February 26th

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OPPORTUNITY FOR EXPERIENCED SALESMAN

Need man experienced in selling primarily to dirt moving contractors. Excellent opportunity. Commission arrangement. Factory training. Inquiries held in strictest confidence. Give full history in first letter. No phone calls please.

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63DT Euclid 22 Ton Rear Dumps
Bros 50 Ton Compactor
600 CFM Chicago Pneumatic Rotary Compressor
Gardner Denver Air Trac Drills with 4½" Drifters
DW-21 Caterpillar with C&D Movall Duck Bodies and/or 470 Scraper Bowls
One Complete Concrete Spread including Batch Plant
Wobble Wheel Roller Le Tourneau Rooter
Sheepsfoot Roller, Dual Drum 42"
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TELEPHONE: PRescott 7-1200

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call **CARLYLE**

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Conveyor Elevator Grader Chute Lining Hot Material Mucker V-Belts Transmission

CARLYLE RUBBER CO., INC.
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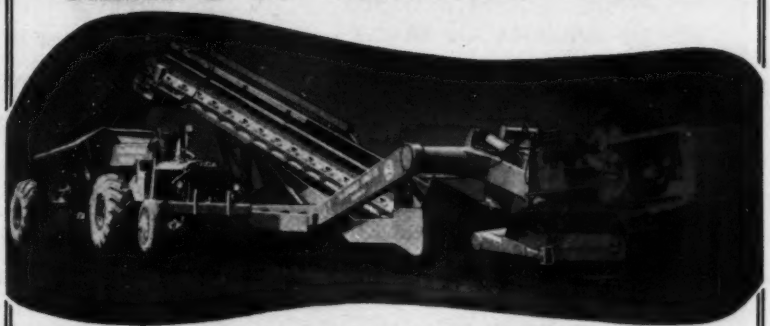
PROMPT SHIPMENTS LOW COST QUALITY PRODUCTS

HERE'S A TERRIFIC BUY!



USED EUCLID Model 9 BV ELEVATING LOADER

Serial No. 183, Powered by G.M.C. 6-71 Diesel Engine, Complete with Belt Conveyor, Crawler Mounting and Towing Yoke, New October 1953, GOOD OPERATING CONDITION. F.O.B. Dayton, Ohio **$19,500.00**

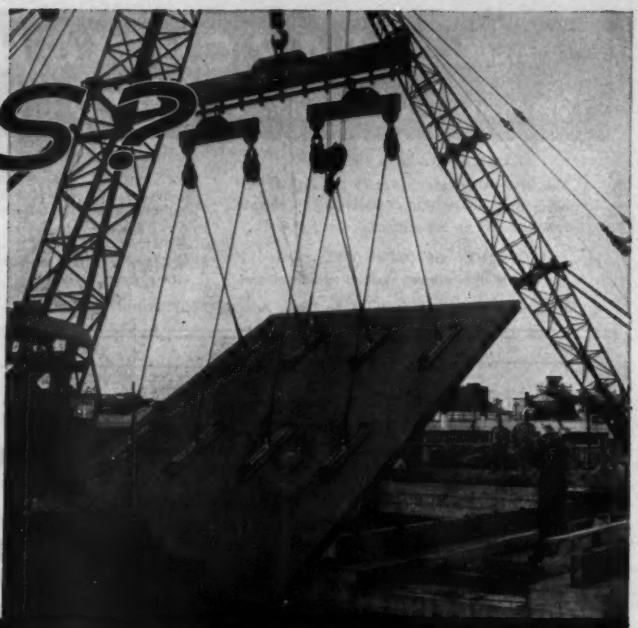
WRITE — WIRE — PHONE — MELROSE 1-2567

THE HIGHWAY EQUIPMENT CO.
2150 LANGDON FARM ROAD CINCINNATI 13, OHIO

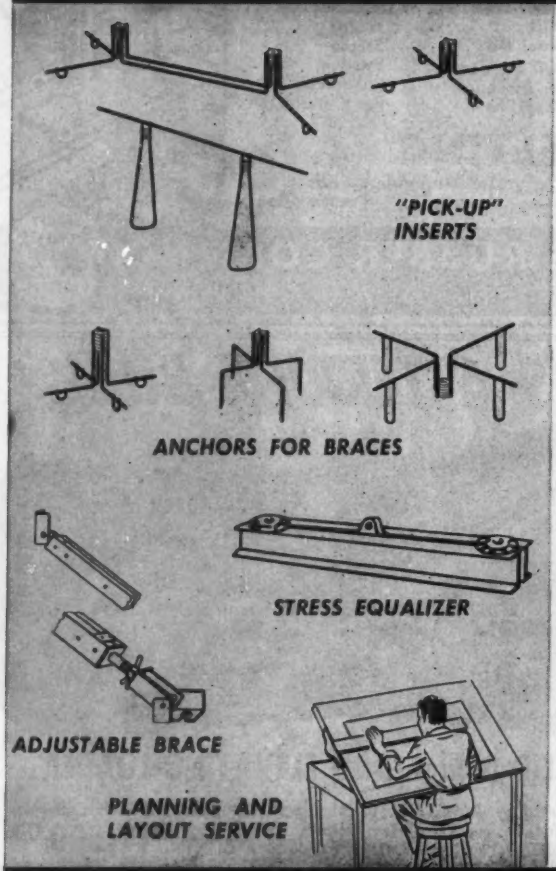
PLANNING TILT-UPS?

From original layouts to final positioning...

SUPERIOR



HAS THE ACCESSORIES AND THE SYSTEM



Tilt-Up jobs can be accomplished faster and with greater efficiency by using SUPERIOR Accessories (shown at left). In addition to Accessories which have been used and proven on thousands of conventional as well as unusual projects in this field, SUPERIOR also provides the *system* for the entire job, from original planning and layouts, to the final positioning of the precast panels with Superior Adjustable Braces.

As the pioneer in this field, Superior has recently developed a special Stress Equalizer for reducing lifting stress in tilt-up panels of over 20 ft. high. It offers two advantages: (1) Less concrete reinforcing steel is required for stresses which occur at time of lift; (2) Permits use of simplified crane rigging.

On your next tilt-up job, avoid expensive crane delays, be assured of safety, and reduce overall costs! Specify the SUPERIOR System.

For details request a copy of Bulletin TU-3.

(Shown above) 67,000 LB. PRECAST PANEL being positioned. 19' 6" wide by 35' high by 8" thick. Swinerton & Walberg of San Francisco is the contractor.

SUPERIOR Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill. (A Suburb of Chicago)

NEW YORK OFFICE
1775 Broadway, N.Y. 19, N.Y.

HOUSTON OFFICE
4101 San Jacinto, Houston 4, Tex.

PACIFIC COAST PLANT
2100 Williams St., San Leandro, Calif.

Advertisers in this month's

Construction Methods AND EQUIPMENT

McGRAW - HILL

330 WEST 42nd STREET, NEW YORK 36 LOngacre 4-3000

Number of copies of this issue printed 51,038

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H. THOMAS McCARREN

Atlanta 3, 1301 Rhodes-Haverty Bldg.
M. H. MILLER

Cleveland 13, 55 Public Square
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Chicago 11, 520 N. Michigan Ave.
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Dallas 1, The Vaughn Bldg. 1712 Commerce St.
GORDON JONES
F. E. HOLLAND

Denver 2, Mile High Center, 1740 Broadway
JOHN W. PATTEN

Detroit 26, 856 Penobscot Bldg.
J. L. RICE

Los Angeles 17, 1125 West Sixth St.
S. S. TIEBOUT

San Francisco 4, 68 Post St.
J. W. OTTERSON
R. C. ALCORN

Europe: McGraw-Hill House, 95 Farringdon St., London E.C. 4, England
E. E. SCHIRMER

1, Rechneigraben, Frankfurt-M, Germany
MICHAEL R. ZEYNEL

Other Sales Offices:
St. Louis 8: Continental Bldg.
Pittsburgh 22: 1111 Oliver Bldg.
Boston 16: 350 Park Square Bldg.

Methods Memo...

Sky's the Limit

Steeplejack Sam Halsted tries out a new rig called a Sky Climber. It weighs only 30 lb but is capable of climbing a cable with a load of up to 1,000 lb.

This one is operated manually. But it can be fitted to operate on compressed air or electric power. With the pneumatic attachment it weighs 55 lb. Two pneumatic Sky Climbers riding on cables at the end of a scaffold can lift a 2,000-lb load 20 ft per minute.

There is no height limit because the Sky Climber merely uses the cable as a track. Most similar rigs are much heavier to begin with, and they accumulate weight as they wind in cable on a drum so their practical height limit is about 300 ft.

Painting crews of the big bridges that span San Francisco Bay have been testing the Sky Climber for the last two years. Operators of the Golden Gate Bridge, the Carquinez Bridge, and the San Rafael Bridge have put them in regular operation.

Carter H. Arnold, a former rigging contractor, is the inventor. He is now an executive of Western Gear Corp. of Belmont, Calif., the firm that manufactures the units.

Pomeroy Buys Gerwick

Two San Francisco heavy construction firms have joined forces. J. H. Pomeroy & Co., Inc., has bought all of the stock of Ben C. Gerwick, Inc., and will operate the Gerwick organization, under the Gerwick name, as a Pomeroy subsidiary.

Gerwick is a pioneer in the prestressed concrete industry and operates prestressing yards in Petaluma, Richmond, and Long Beach, Calif. Ben C. Gerwick, Jr., served as president of the Prestressed Concrete Institute in 1957-58.

Recently the Gerwick firm has worked as a joint venture partner with Pomeroy on a number of jobs, including construction of the Petaluma Creek Bridge and of the lower deck approaches to the Richmond-San Rafael Bridge.

J. H. Pomeroy & Co. has crews working on jobs around the world. They are specialists in industrial plant construction but also have worked on a number of bridge, highway, and waterfront facilities jobs.

Ben C. Gerwick, founder and chairman of the board, and Ben C. Gerwick, Jr., president, will continue in those positions. R. N. Pomeroy and William A. Pomeroy, president and executive vice president of the Pomeroy firm, will become directors of the Gerwick subsidiary.

U. S. Dome in Moscow

A major part of the U. S. exhibit at the Moscow exhibition next summer will be housed in a gold-colored aluminum geodesic dome made up of 1,110 diamond-shaped panels.

The dome will have a center height of 65 ft and provide a clear-span floor area of 300,000 sq ft. It will have a diameter of 200 ft.

Kaiser Aluminum is fabricating components for the dome. Lydick Roofing Co. of Fort Worth, Tex., will be the contractor in charge of erection.

Erection plans are based on use of a portable 130-ft mast set up in the center of the area the dome will occupy. The contractor will assemble a section of aluminum panels around the base of the mast, then raise them enough to assemble other sections of panels until the dome is raised and anchored to concrete piers.

Sign of the Times

This is the way R. E. Hazard Contracting Co. greets motorists at the site of their freeway job in San Diego, Calif. We'll bet those southern California "cats" get many a chuckle from it. And if you don't man, you're just a square from nowhere.

Builder Tully's words of wisdom

1.

"I've been a builder forty years," Phil Tully told his boy,
"I'm giving you my company, my greatest pride and joy."
Now, sound advice was also part of Tully's legacy:
"Get Travelers for construction bonds—a solid policy."

2.

As boys are wont to, Tully, Jr. flouted Dad's advice—
He figured bonds were all alike, and *any* would suffice.
He did not call The Travelers when a big job came along;
He couldn't enter *any* bid—his bond was late and wrong.

3.

"I'll never make the same mistake again," our hero swore,
"My patriarch advised me right: it's Travelers evermore."
That day he called The Travelers, "Hasten! Satisfy my need:
I want a bond—I want it fast—with supersonic speed."

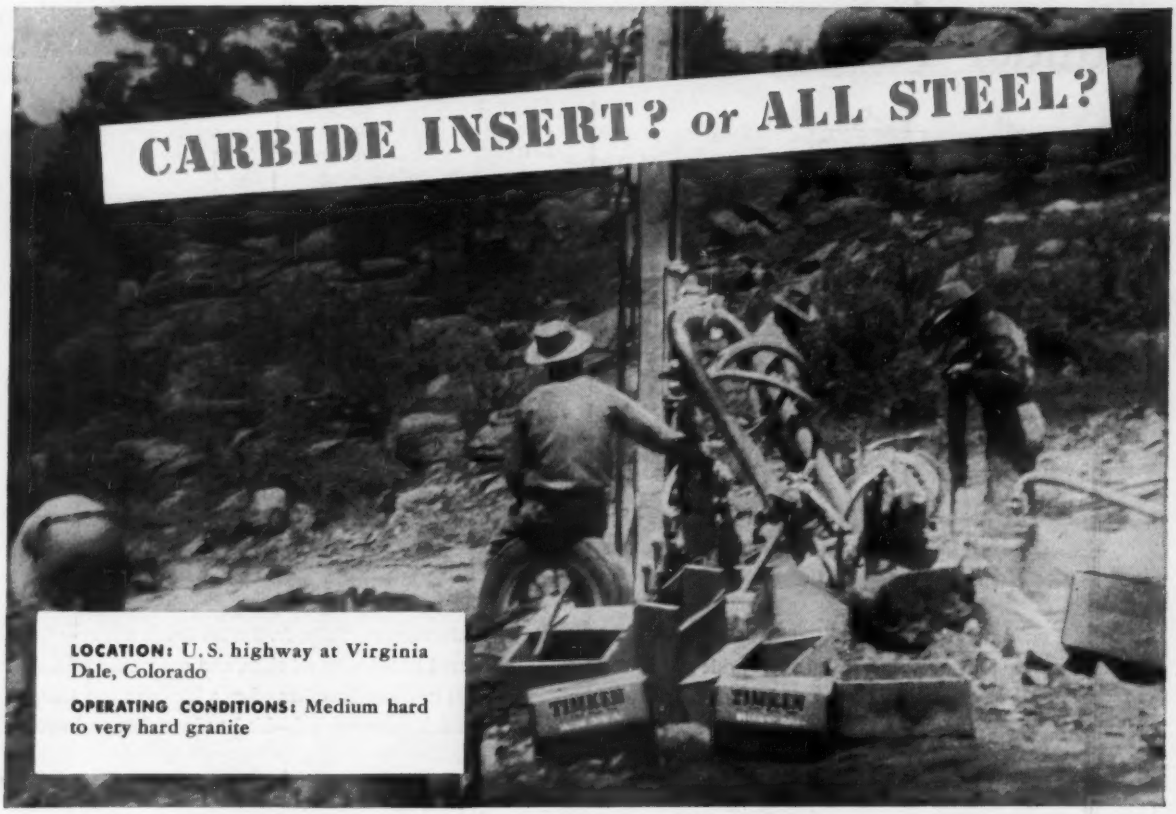
4.

He hung the telephone back up and wow! Was he surprised—
Before his eyes was Travelers' man, as fast as advertised.
Why let a tardy bond derail *your* well-laid bidding plan?
For speedy bonds and expert service get a Travelers man.

NOTE: *Comp, Equipment Floaters—Builders' Risk Insurance, too Are other ways The Travelers helps a contractor like you.*

THE TRAVELERS
Insurance Companies
HARTFORD 15, CONNECTICUT

All forms of business and personal insurance including Life • Accident • Group • Fire • Marine • Automobile • Casualty • Bonds


CARBIDE INSERT? or ALL STEEL?
LOCATION: U. S. highway at Virginia Dale, Colorado
OPERATING CONDITIONS: Medium hard to very hard granite
TIMKEN
TIMKEN

"We switch our TIMKEN® bits and drill up to 10 inches per minute in granite"

. . . Reports Northwestern Engineering Co.

GRANITE in varying hardness—that was the problem facing Northwestern Engineering Co., of Denver, in drilling the blast holes for relocation of the U. S. highway at Virginia Dale, Colorado. They solved the problem by using Timken® all steel multi-use bits in the *medium-hard* granite—then switching to Timken carbide insert bits for the *very hard* granite. And they averaged 6 to 10 inches per minute!

Switching your Timken bits like this can prove economical for you, too. Timken carbide insert bits are your best bit for drilling in hard, abrasive ground. But in softer ground use Timken all steel multi-use bits. Both bits are interchangeable in the same thread series. Without changing drill steels, you can change bits quickly and easily as the ground changes.

All Timken rock bits are made from world-famous Timken fine alloy steel. And for even longer life, Timken bits have a specially developed shoulder union that protects threads against drilling impacts.

Get all these advantages by using bits made by the world's largest manufacturer of removable rock bits. Timken bits! For help in selecting just the right bit, call or write: Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". Makers of tapered roller bearings, fine alloy steels and removable rock bits.

Timken threaded all steel multi-use rock bit

Timken threaded carbide insert rock bit

TIMKEN® ***your best bet for the best bit for every job***